Share

Managing water across boundaries

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Water & Nature Initiative

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Key messages

1. Overview of the World's Shared Water Resources

International rivers provide an estimated 60% of the world's freshwater flows
There are some 260 international river basins in the world. They cover nearly half of the Earth's surface and are home to 40% of the world's population.

Growing water demands will force nations to develop these shared resources
Growing populations and growing economies call for more and more water. Increasingly, countries will need to turn to these shared resources to meet demands for drinking water, agriculture, energy and industrial production – raising risks of conflict, overutilization and further ecosystem degradation.

Basins, rather than boundaries, define the best scope for water management
Integrated water resource management strategies – processes that promote the coordinated development and management of water, land, and related resources at the river basin level – are widely accepted as the most sustainable, efficient and equitable.

All basins have boundaries, and all can benefit from cooperation
Boundaries exist between nations, municipalities, and even between user groups within a village. From the international to the local level, there will be competing demands for water resources. These demands are best assessed and addressed holistically.

2. Why Share? The Benefits (and Costs) of Transboundary Water Management

Nations will cooperate when they believe it is in their interest to do so
The choice between cooperation and non-cooperation will be made based on perceptions of which alternative will provide greater benefits. These benefits can be environmental (benefits to the river), economic (benefits from the river), political (benefits because of the river) or even broader (benefits beyond the river).

Cooperation is mutually beneficial
Cooperation on international rivers can range from information sharing, to joint basin management and development. It brings benefits that neither country could achieve alone – not least because it allows river basins to be treated as holistic systems, which is the ultimate goal of integrated water resources management.

Cooperation can enhance efficiency and equity

Cooperation, and in particular benefit and cost sharing, can promote more efficient and more equitable river basin management by separating the physical location of river development (where activities are undertaken), from the economic distribution of benefits/costs (who profits from/pays for those activities).

Cooperation is a challenge at all scales, from the village to the nation

Robust, adaptable mechanisms for the fair distribution of benefits among stakeholders at all levels are essential for sustained cooperation. Benefit sharing at the local level, particularly with those directly affected by water management decisions, can be as challenging as benefit sharing at the international level.

3. Stakeholders in Benefit Sharing and the Management Process

A range of stakeholders can contribute to transboundary water management

Stakeholders can be individuals, groups or organizations either directly or indirectly concerned with transboundary water resources management. Identifying and engaging stakeholders will further management objectives, ensure that costs and benefits are shared more equitably, and avoid damaging conflicts.

Engaging the right stakeholders at the right time is key

Different forms of engagement are necessary for different types of stakeholders. Identifying the full range of stakeholders and mapping their interests, abilities and influence at different stages in management processes can assist in determining when and how they can best be engaged.

Stakeholder engagement must be viewed as a long-term engagement

Transboundary water management is a long-term process with inter-generational goals. Stakeholder engagement must be viewed on the same time horizon, requiring a dynamic and flexible approach that can respond to changes in the configuration of stakeholders and their needs and interests over time.

Financing arrangements need to include the costs of stakeholder engagement

From the earliest stages of project development through implementation and monitoring, stakeholder engagement should be written into financing arrangements. Financing plans should be phased and adequately flexible to respond to changing needs and opportunities.

4. Legal Frameworks for Transboundary Cooperation

International legal regimes anchor transboundary water management

Transboundary institutional and regulatory frameworks are the backbone of cooperative management systems. While they will not prevent all disputes, they are essential in clarifying the 'rules of the game' and thus enhancing legal security and reducing the likelihood of water disputes among sharing states.

International regimes need to be transposed to national and local levels
International law on freshwater needs to be translated into concrete rights and obligations for individuals and institutions within states. This is achieved through national and local water laws and management processes.

States have rights to use their water resources, but duties not to harm others
'Equitable utilization' is one of the most important customary rules for sharing water resources. It is based on the notion of equality of rights, which calls for balancing all reasonable interests, rather than equal shares of water.

Dispute settlement mechanisms are an important element of any legal regime
In order to make international water law effective in practice, states have to agree on methods for peaceful settlement of disputes and enforcement instruments to respond to non-compliance.

5. Institutions for Transboundary Basins

Institutions provide the 'rules of the game', both formal and informal
Transboundary water management institutions can leverage opportunities and solve problems created by water that crosses boundaries. They can be as informal as unwritten understandings or working arrangements; or very formal, embodied in international river basin organizations or legally binding treaties.

There is no ideal transboundary water management institution
Transboundary institutions can have a variety of functions, ranging from data and information sharing, to handling discrete tasks such as constructing a dam, to the overall management of water issues within their basin. Functions and goals will largely determine the form institutions should take.

Transboundary institutions must have the flexibility to adapt
Formal agreements and institutions are difficult to modify, they should therefore be designed to handle the unexpected changes in information, conditions and priorities that will inevitably occur over time. This challenge can be overcome by building in institutional flexibility.

Ensuring adequate financial and human resources is an enduring challenge
Some institutions can link their financing directly to the development and operation of economic assets such as dams; for others, it is more difficult. Maintaining an appropriate range and mix of human resource capacity is also complex as circumstances, knowledge and priorities rapidly evolve.

6. Implementing Cooperative Transboundary Water Management

Implementation is more than simply proclaiming principles and rules
Implementation of international agreements is generally defined as the activities a state undertakes to fulfil its obligations and to achieve the goals and objectives of the treaty, i.e., transposing agreements into national law, establishing appropriate institutions and enforcing compliance.

Governance is the over-arching imperative for implementation

Effective implementation requires real commitment from governments and stakeholders, and a difficult balance between holding to the spirit and specific obligations of agreements, while developing operational modalities and adapting to changing circumstances.

Knowledge and participation should guide the process of implementation

Knowledge and participation build trust, ownership and common understanding among stakeholders – their value cannot be overstated. They help to clarify goals, enhance effectiveness, diminish conflicts and sustain cooperative transboundary water management.

Adaptive management allows flexibility in transboundary water management

Adaptive management processes – involving continuous communication, review and reassessment – are essential for implementing transboundary water management against a backdrop of rising demand, tensions and climatic uncertainty.

Preface

Transboundary rivers are increasingly being drawn upon to meet the needs of growing populations and economies. This increased pressure on the available water resources sharpens competing demands between countries, rural and urban areas, different user groups, and the river ecosystems themselves. The challenge is to balance these competing demands in a way that is equitable and sustainable for present and future generations.

Nowhere is the challenge of transboundary water management more pronounced than in Africa. The continent's history has left it with more international rivers shared by three or more countries than any other continent in the world (there are over 60 transboundary river and lake basins in Africa with approximately two-thirds of the continent's population). Africa has responded with some innovative transboundary river management initiatives, for example in the Niger, Nile and Senegal Basins. But these challenges are in no way unique to Africa.

Promoting peaceful cooperation and developing synergies between different users of water at all levels within and between states, is a global challenge. The importance of strengthening riparian relations and the need for cooperative management of shared water resources are growing, and all against a backdrop of considerable climatic uncertainty.

This book presents practical tools for conceptualizing and implementing cooperative, participatory management of shared water resources. It stresses the importance of information, communication, institutions and adaptability. It points to the range of benefits from water management and development that can be derived cooperatively, and must be shared equitably.

The lessons presented here provide valuable insights for states, civil society, and all of us who share and value water's many attributes.

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Minister of Water and Environment &
Chairperson Nile Council of Ministers
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VOLTA RIVER
INDUS RIVER
GANGES RIVER
MEKONG RIVER
PARANA RIVER

Chapter 1

Overview of the World's Shared Water Resources

1.1 Transboundary water resources

Nations share more than 260 international river basins which cover nearly half of the Earth's surface (see Figure 1.1), provide an estimated 60% of global freshwater surface flows and are home to some 40% of the world's population.[1] As demand for water grows in all countries, these shared resources will increasingly be drawn upon to meet the competing needs of billions of people for drinking water, food, energy, and industrial production – leaving less water, often of much lesser quality, to sustain ecosystems and to meet people's future demands. Even where historically robust water sharing and river basin management is practised, the uncertainties of climate change are likely to pose new risks that will challenge riparians – those who share a river basin – to enhance cooperation.

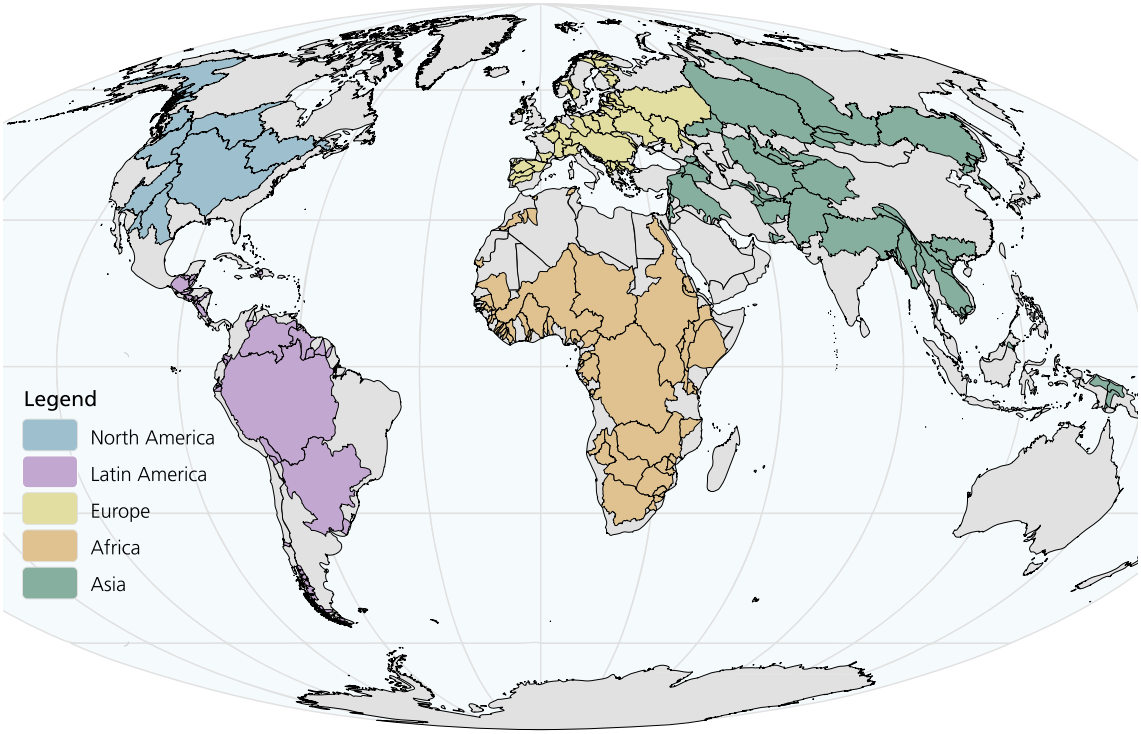
"SHARED WATER RESOURCES WILL INCREASINGLY BE DRAWN UPON TO MEET COMPETING NEEDS OF BILLIONS OF PEOPLE."

International rivers are not unique in posing the challenge of sharing water resources. Transboundary water resources and tensions among competing users are found at all scales. Sub-national entities such as states, regions, provinces and municipalities need to share and cooperatively manage the waters that flow between them. Even at the smallest scales, within a city or village where no political or physical boundaries are apparent, different users generally find it challenging to share water in a manner that is considered by all to be fair and reasonable. From the international to the local level, similar tensions and opportunities will arise wherever users share a water resource whose quality and quantity affects, and is affected by, all of its users.

Box 1.1 The terminology of transboundary water resources

Terminology can be contentious. The term 'international rivers' can refer to water within the river channel (the term watercourse is often used for this purpose), or to the entire drainage system, and/or related groundwater systems. The term 'international river basin' generally refers to surface flows, groundwater, rainfall and soil moisture within a watershed. In maritime law, the term 'international waters' is the legal term for marine waters that lie outside any national jurisdiction, whereas when it is used to describe shared watersheds, it can have the same meaning as 'international rivers'. Here we use the terms transboundary water resources and shared water resources interchangeably, to refer to freshwater (surface and groundwater) that flows across national or sub-national boundaries.

Figure 1.1. International river basins



"TENSIONS AMONG COMPETING USERS ARE FOUND AT ALL SCALES."

1.2 Managing transboundary waters

It is widely accepted that best-practice water resources management is undertaken at an integrated basin-wide scale.[2] Managing the river basin as a whole is the best way to ensure the integrity of the ecosystem. It is also the best way to leverage productivity and increase the total sum of benefits because it allows planners to find the best possible locations for different activities (e.g., fisheries, food and fibre production, hydropower generation, recreation and navigation) and manage activities' interactions and trade-offs.

"BEST-PRACTICE WATER RESOURCES MANAGEMENT IS UNDERTAKEN AT AN INTEGRATED BASIN-WIDE SCALE."

Basin-wide management in a transboundary basin, however, requires transboundary cooperation. Because all basins are shared by multiple users, there will always be challenges in managing basins holistically while at the same time satisfying the distinct interests of multiple stakeholders. These tensions will be evident at all scales, from nations to villages.

Tension between aspirations for equity and the reality of asymmetrical power will also exist in any sharing scheme. The hydrological, political and economic attributes of a river will frame the context for basin management.

The physical characteristics of the river matter. Rivers that are abundant or over-drawn, constant or flashy, healthy or degraded, navigable or not, will all give rise to different opportunities and tensions. The geospatial relations of riparians will matter. The dynamics between littoral riparians (who reside on opposite banks of a shared river) are likely to be substantially different from sequential riparians (who reside strictly upstream or downstream from one another) in terms of the way in which they view their interests and their alternatives to cooperative water management.

In addition to physical characteristics, the political and economic attributes of riparians are relevant to the dynamics of water sharing. If the river is shared by many riparians or by just two, if there are historical ties or tensions among the countries, if one riparian has significantly greater knowledge of the river system, all of this will influence the way in which negotiations over water sharing play out. In particular, if there is political, military, and/or economic hegemony on the river, this asymmetry in power will colour the context within which all agreements are made.[3]

"HYDROLOGICAL, POLITICAL AND ECONOMIC ATTRIBUTES FRAME THE CONTEXT FOR BASIN MANAGEMENT."

1.3 Sharing transboundary waters

Traditionally, the focus in negotiations over shared rivers has been the apportioning of water. Once the water is divided, each country (or user group) then seeks to optimize management within its borders rather than across the shared basin. More recently negotiations on some rivers have focused on benefit sharing – allocating the benefits derived from the various uses (and non-uses) of water, rather than the water itself.[4] In this construct, alternative patterns of consumptive and non-consumptive uses are considered, and agreements are reached over how to develop the shared resource and allocate the benefits and costs of that development.

Benefit sharing enables a basin-wide planning perspective, which not only allows better management of the resource, but also provides far greater scope for identifying cooperative management arrangements that are acceptable to all parties. A focus on sharing benefits rather than water volumes can release negotiators from a zero-sum competition over a single, finite resource. They can instead focus on a more flexible – and potentially positive-sum – basket of benefits that can derive from alternative patterns and partnerships in water use. Benefit sharing also offers a vehicle for structuring or redistributing costs and benefits where needed to achieve feasibility and fairness. Furthermore it can bring greater transparency to negotiations by providing clarity on trade-offs, and diminishing asymmetries in access to information that often underlie negotiations.[5]

Although this book does not focus explicitly on power relations between riparians, it must be recognized that all negotiations on water sharing are intensely political. Benefit sharing can, to some extent, lessen information asymmetries by explicitly examining alternative patterns of water use and the distribution of benefits and costs. Benefit sharing can also be a vehicle for exploring indirect or intangible benefits of cooperation, such as trade, security or international standing, which might temper hegemonic positions or even influence perceptions of power balances. Still, benefit sharing will never displace political realities; rather, it should be facilitated pragmatically within the political context.

"NEGOTIATIONS ON WATER SHARING ARE INTENSELY POLITICAL."

1.4 SHARE

The way in which transboundary waters are shared and managed will have profound effects on the environment, equity, poverty, prosperity and geo-political relationships. Sharing water resources – against a backdrop of growing populations, diversifying economies and the uncertainties of climate change – thus poses a serious challenge for the 21st century. This book is aimed at those who wish to contribute to meeting this challenge: decision makers, practitioners and stakeholders seeking to facilitate more equitable, efficient and sustainable transboundary water management through a benefit-sharing approach.

SHARE seeks to elaborate the building blocks of a benefit-sharing approach to transboundary water management, and provide a roadmap of the process. Three broad phases in this process can be considered: (1) motivation, (2) design, and (3) implementation. The complexity of transboundary waters requires a broad range of expertise including, *inter alia*, hydrology, economics, law, ecology, sociology, negotiations and facilitation – and it requires that those experts work together. Throughout, the *process itself* is extremely important. Building trust, knowledge and ownership of the eventual institutions[6] is essential for success.

"THE COMPLEXITY OF TRANSBOUNDARY WATERS REQUIRES A BROAD RANGE OF EXPERTISE."

Photo 1.1 Camels shelter from the sun under rusting shipwrecks near the village of Dzambul, a former fishing town on the shore of the Aral Sea (Kazakhstan).

The following chapters are arranged roughly in the order of the phases shown in Table 1.1. Chapter 2 focuses primarily on motivation, describing the construct of benefit sharing and the potential benefits and costs of cooperation, which are the basic incentives for cooperative management of transboundary waters. Chapters 3, 4 and 5 deal primarily with the design phase. Chapter 3 focuses on stakeholder participation, which is essential for identifying potential benefits and costs, structuring trade-offs and ensuring equity and sustainability. Chapter 4 describes the legal frameworks that provide legitimacy and guidance for negotiations in transboundary cooperation, as well as a critical means of institutionalizing and enforcing agreements. Chapter 5 describes the institutions and institutional characteristics needed to structure and sustain cooperation. Finally, Chapter 6 describes the real-world challenge of implementing transboundary cooperation and provides a simple roadmap for pursuing this great challenge.

Table 1.1 Alignment of chapters to the phases of development as a benefit sharing approach to transboundary water management

	Phase 1 **Motivate**	Phase 2 **Design**	Phase 3 **Implement**
Benefit sharing Chapter 2	●●		
Stakeholder partipation Chapter 3		●●	
Law Chapter 4		●●	
Institutions Chapter 5		●●	
Implementation Chapter 6			●●

Chapter 2

Why Share? The Benefits (and Costs) of Transboundary Water Management

Water users at all scales will share water cooperatively when they believe it is their best option. This is a reasonable criterion – as long as the full range and true values of benefits and costs are recognized in the assessment of alternative options.

"WATER USERS WILL SHARE WATER COOPERATIVELY WHEN THEY BELIEVE IT IS THEIR BEST OPTION."

2.1 Sharing water versus sharing the benefits of water

Traditionally, transboundary water management involved allocating water shares between countries. But finite water allocations can trap riparians in a 'win-lose' framework with little room for compromise and no incentives for basin-wide management. Benefit sharing provides a more flexible framework that can dramatically increase the range of cooperative possibilities.

"A FOCUS ON WATER ALLOCATIONS CAN TRAP RIPARIANS IN A 'WIN-LOSE' FRAMEWORK WITH LITTLE ROOM FOR COMPROMISE AND NO INCENTIVES FOR BASIN-WIDE MANAGEMENT."

Sharing water through assigned rights remains the most widely recognized way in which states negotiate the sharing of international rivers. Water allocations are generally perceived to be a 'zero-sum game' in which water resources are finite and one use will always preclude another. Furthermore, water rights provide just a single avenue for discussion. If water-rights negotiations stall, a deadlock can be difficult to break because there is nothing else to be negotiated.

In fact, although physical water resources are indeed finite, the quantity of *available* water resources can be enhanced by management actions. For example, good watershed management can effectively increase the water resource by minimizing erosion, maximizing water infiltration into the soil, and slowing run-off; by providing over-year storage to buffer rainfall variability and reserve water in abundant years that would otherwise be lost; and by locating these storage reservoirs in areas of the basin with the least evaporation losses and environmental disruption.

A well-managed watershed also offers many non-consumptive benefits, such as fisheries, navigation, recreation, biodiversity habitat and in some cases hydropower generation. The 'use' of water for these purposes will not necessarily diminish the water available in the system for other uses.

When negotiators focus solely on allocating shares of water, there is little incentive to explore these alternative – and potentially more beneficial – use patterns. Conversely, a focus on benefit sharing clearly demonstrates the ways in which cooperation can actually increase the benefits of a river

– and in doing so promotes sustainability and efficiency. Just as good water resource management practices can increase the availability of water in a river system, basin-wide management and development can increase the overall health and productivity of a river system. In some cases, potential non-consumptive benefits can be found without even changing the pattern of water extractions. Many basin-wide configurations of consumptive and non-consumptive water uses can be explored to find options that meet the needs of the river and all the riparians.

"BENEFIT-SHARING APPROACHES DEMONSTRATE THE WAYS IN WHICH COOPERATION CAN ACTUALLY INCREASE THE BENEFITS OF A RIVER."

Negotiating parties are usually not interested in the water itself, but rather in the economic opportunities and ecosystem services that can be obtained from access to that water. When two nations negotiate the management and development of a shared river, they could just focus on the allocation of water rights or, more flexibly, they could focus on the development and distribution of benefits derived from the use of water (see Table 2.1).

Benefit sharing provides riparians with the flexibility to separate the *physical* distribution of river development (where activities are undertaken), from the *economic* distribution of benefits (who profits from those activities). Ideally, this separation allows riparians to focus first on generating basin-wide benefits, and second on sharing those benefits in a manner that is agreed as fair. Thus, riparians can manage the basin holistically and efficiently, conserving essential ecosystems, and locating energy, industry, and agricultural development where it is most productive and least environmentally and socially disruptive.

Negotiators focused on benefit sharing can use numerous mechanisms to negotiate a transparent, targeted distribution of benefits that suits all parties (see Table 2.2). With more on the table to negotiate, parties have more opportunities to find mutually acceptable solutions. Shifting focus to de-link the benefits of the resource from its physical parameters can provide a more flexible framework for negotiations, while still retaining the flexibility to structure the distribution of benefits fairly.

Case 2.1 The Indus River – enhancing communication, uniting riparians

The Indus Waters Treaty (IWT), signed in 1960, has successfully sustained communications and cooperative transboundary management between India and Pakistan for nearly 50 years – despite geopolitical tensions and three armed conflicts.

The partition of India and Pakistan in 1947 made the Indus an international river. The dependence of both countries on its waters necessitated a cooperative resolution of conflicting demands. After years of bilateral negotiations, the World Bank was asked to mediate and, following extensive consultations, made a proposal to essentially divide the river system between the two countries. The proposal allocated the western rivers to Pakistan and the eastern rivers to India.

The Treaty established a Permanent Indus Commission; formalized communications such as yearly reports on the status of the waters and prior notification requirements for river development plans; and set out a clear conflict resolution mechanism.

The IWT has proven a robust agreement in an extremely complex political context. However, the main weaknesses of the IWT are the absence of a mechanism for public participation and the lack of an integrated approach to water management that likely could have provided greater benefits to all. Both countries also have concerns over evolving demands and pressures on the river – including water quality and environmental flow requirements that were not addressed when the IWT was negotiated. India and Pakistan are discussing the option of reviewing the treaty, but it is questionable even now whether they would be able to come to an agreement on the basis of a more integrated approach to basin management.

2.2 The benefits of cooperation

Benefits motivate cooperation, so it is important to identify the full range of potential cooperative benefits. Four types of cooperative benefits are described in Table 2.1.[7] The first benefit is that cooperation enables better management of the watershed ecosystem, providing *benefits to the river* itself and underpinning all other benefits that can be derived. The second benefit is that efficient, cooperative management and development of shared rivers yield major *benefits from the river,* such as increased food and energy production. Tensions between co-riparian states will always be present, to a greater or lesser extent, and those tensions generate costs. The third benefit is that cooperation lessens tensions between competing riparians, which in turn can *reduce costs because of the river*. And finally, cooperation that yields benefits from the river and reduces costs because of the river can yield a fourth type of benefit: greater overall cooperation, even economic integration, among states, which can be described as benefits *beyond the river*.

"BENEFITS MOTIVATE COOPERATION, SO IT IS IMPORTANT TO IDENTIFY THE FULL RANGE OF POTENTIAL ENVIRONMENTAL, ECONOMIC AND POLITICAL BENEFITS."

Table 2.1 Types of benefits from cooperation Source: Adapted from Sadoff & Grey (2002).

	The challenge	The opportunities
Type 1 *Providing benefits* ***to the river***	Degraded water quality, watersheds, wetlands and biodiversity	• Flood and drought mitigation • Erosion and sediment management • Wetlands and biodiversity conservation • Water conservation and minimum flows
Type 2 *Yielding benefits* ***from the river***	Increasing demands for water, sub-optimal water resources management and development	• Increased hydropower, agriculture and fisheries yields • Enhanced livelihoods and food security • Navigation, tourism/recreation • Carbon credits and payments for water-related ecosystem services
Type 3 *Reducing costs* ***because of the river***	Tense regional relations and political economy impacts	• Cooperation and increased political stability • Policy shifts from food/energy self-sufficiency to food/energy security
Type 4 *Generating benefits* ***beyond the river***	Regional fragmentation	• Regional integration • Regional investment, and industrial and commercial development • Regional trade and increased market access (including exports) • Diversified economies

Benefits to the river can be leveraged through cooperative basin-wide management of river ecosystems. Cooperative river basin management can be a valuable and relatively uncontroversial start for international cooperation. Environmental management is the cornerstone of river basin management and development, and can bring benefits to all river uses and users. Although rivers are resilient ecological systems that can often recover from natural and human-induced shocks,

growing populations and industrialization almost always damage them, for example, by reducing flows, eroding water quality, and reducing fish stocks. Organizing proactive, coordinated action to protect a river, even within a single nation state, has proved complex and the challenge of protecting international waterways is even greater. In some circumstances, particularly in very poor regions, there is often a sharper focus on river development for human needs than on ecosystem management. Yet rivers are balanced systems that can be disrupted by unmanaged development resulting in major social and economic impacts. Environmental protection and economic development are simply not separable. Cooperation in the management of land and water within a basin ecosystem brings *benefits to the river*, and may even be a prerequisite for deriving *benefits from the river*.

Benefits from the river can be enhanced by managing a river basin from a system-wide perspective to increase the quality, the available quantity, and the economic productivity of river flows. Good river basin development promotes an integrated, system-wide perspective, in which the full range of water-use opportunities and the inter-relationships of individual water uses can be considered. More food, more power, more navigational opportunities can all be captured while sustaining environmental integrity. Difficult trade-offs will often arise between environmental conservation and river development, but these assessments are always best made at the basin scale. The shift in planning perspective to the basin scale will also reveal economic gains that can be made from the cooperative management of shared waters.

"COOPERATIVE PLANNING AT THE BASIN SCALE REVEALS POTENTIAL ECONOMIC GAINS."

Case 2.2 Integrated management of the Senegal River[8]

The Senegal River Basin Development Organization (OMVS, Organisation pour la Mise en Valeur du Fleuve Sénégal) is considered a model for promoting cooperative transboundary water management and joint water investments. Established in 1972 by Mali, Mauritania and Senegal, its mandate was to strengthen member states' economies and protect livelihoods through the development of water and power resources from a basin-wide perspective.

The OMVS built and currently operates the multipurpose Manantali Dam (in Mali) and Diama Dam (on the border of Mauritania and Senegal). The costs and benefits of these investments are shared among the three original OMVS states – Mali, Mauritania and Senegal – according to an explicitly agreed formula. While these structures are exemplary for their cooperative development, they have had negative environmental and social impacts. Significant efforts have been made to address these issues.

In 2002, a breakthrough Water Charter was adopted that embodies good practice principles on equity, integrated water resources management and environmental protection. It requires, for example, that dam operations in the basin guarantee a baseline 'environmental flow' whenever the annual hydro-climatic conditions permit, and that releases of water from the Manantali Dam mimic annual floods in order to meet the needs of recession agriculture and floodplain ecosystems downstream.

Guinea, the final and most upstream riparian on the Senegal River, has recently joined the OMVS. Guinea's participation allows full basin-wide management of the Senegal, and provides opportunities for more enhanced coordination in watershed management and hydropower development.

Because of the river many riparian neighbours have a history of tensions. Far-reaching gains can be made if cooperation helps diminish the tensions that have arisen over the control of river flows. Issues of sovereignty, strategic necessity and national pride (often linked to, and perhaps even indistinguishable from, other tensions) may reach the point where they colour geopolitical relationships between states within a basin and become obstacles to growth by blocking regional

trade and diverting human and financial resources. These tensions and costs will always be present to some degree in all river basins; in some basins they may be insignificant, in others they may present enormous challenges. The challenge is for international river negotiators to enhance relationships through shared opportunities, contributing to the benefits of cooperation and integration *beyond the river.*

"THERE CAN BE REAL BENEFITS TO DIMINISHING THE TENSIONS THAT OFTEN ARISE BETWEEN WATER USERS."

Beyond the river lie a great many more opportunities for cooperation. Cooperation in the management and development of international rivers can promote and reinforce other cross-border cooperation. Increasing the benefits from the river and decreasing the costs arising because of the river can spur economic growth and regional integration, generating benefits even in apparently unrelated sectors. Flows other than water – such as improved communications and trade – may grow. Thus progress in cooperation on shared-river management can enable and catalyze benefits 'beyond the river', more directly through economic linkages and less directly through diminished tensions and improved relationships.

Each of these four types of benefits could potentially be achieved in all international river basins, but the scale, feasibility and relative importance of each type will vary between basins. The relative potential for different types of benefits within a particular basin will be a result of physical opportunities, costs and the type of cooperation that is developed between riparian states.

Similarly, each type of benefit could be an appropriate point of entry for cooperation; there is no particular sequence in which these four types should be pursued. Often a precipitating event, such as a drought or flood, will generate a sense of urgency for cooperating in one way or another. Wherever there is initial cooperation, other types of cooperation may follow. Making a start in environmental (Type 1) or direct economic cooperation (Type 2) can lead to growing political (Type 3) and indirect economic cooperation (Type 4) – or vice versa. The dynamics between types might be positive or negative. For example, while Type 3 cooperation may help further advance Type 1 and Type 2 cooperation, setbacks in Type 3 relations may impede cooperation of Types 1 and 2.

Cooperation can provide a broad range of benefits, some obvious and some much less apparent, some universally valued and some of value only to specific stakeholders. Recognizing these benefits and understanding their values and dynamics is critically important, because they drive the choice between conflict and cooperation.

"RECOGNIZING BENEFITS AND UNDERSTANDING THEIR DYNAMICS DRIVE THE CHOICE BETWEEN CONFLICT AND COOPERATION."

2.3 When does it make sense to share?

2.3.1 Recognizing international cooperation as a national priority

The choice between cooperation and non-cooperation will be made based on perceptions of which alternative will provide greater benefits. Simply put – nations will cooperate when they believe it is in their interest to do so.

In some cases the benefits may not justify the costs of cooperative actions, but in others the benefits could be very high. Cooperation on international rivers can even bring many benefits that

neither country could achieve alone because cooperation allows the river basin to be treated as a holistic system – the ultimate goal of integrated water resources management – and thus increase the possible benefits that can be derived from it. Benefits are anything that society recognizes as valuable, such as livelihoods, growth, ecosystem services, biodiversity, natural and national heritage, security, gender equality, ethics, aesthetics and international perceptions. Identifying and understanding the range of often interrelated benefits derived from the cooperative management and development of international rivers is central both to better management of the world's rivers, and to relations among the nations sharing those rivers.

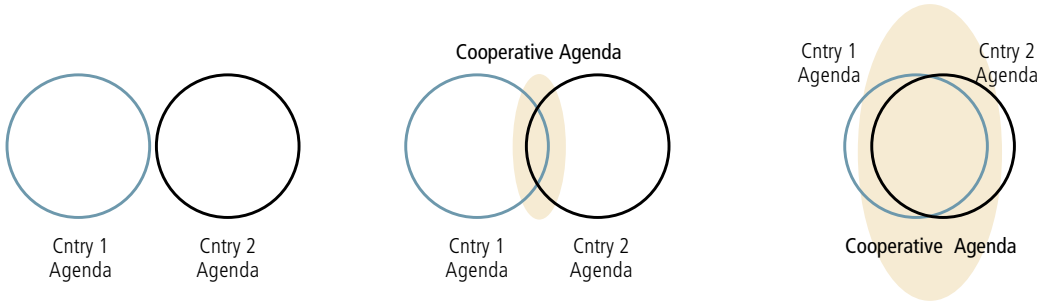
"COOPERATION ON INTERNATIONAL RIVERS CAN BRING MANY BENEFITS THAT NEITHER COUNTRY COULD ACHIEVE ALONE."

By recognizing that all riparians have a common overarching goal – to sustain a healthy and productive river system – national priorities and international priorities can begin to align. Sovereign countries will always have national agendas for the development of their international rivers: this is rational and legitimate.[9] In a river basin shared by two states, there will be two national agendas. If these two agendas include some of the same goals, such as flood mitigation or the maintenance of environmental flows, there will be a third overlapping, cooperative agenda that is in the interest of both groups (see Figure 2.1). If the emerging cooperative agenda provides benefits that cannot be attained (or cannot be attained at a reasonable cost) through non-cooperative national agendas, then cooperation will become a rational priority of both nations.

This common, cooperative agenda may be quite small or quite substantial. In some basins over time, as trust builds and opportunities are progressively recognized and secured, the common agenda may grow until the two national agendas essentially converge. Identifying and advocating a mutually beneficial cooperative agenda is a first step in promoting cooperation.

"IDENTIFYING A MUTUALLY BENEFICIAL COOPERATIVE AGENDA IS A FIRST STEP IN PROMOTING COOPERATION."

Figure 2.1 Converging perceptions, priorities and agendas



The level of convergence among riparian agendas will be determined by the specific characteristics of the river system, environment, economy and society.

Source: Adapted from Sadoff & Grey (2005).[10]

2.3.2 What is 'cooperation' and when does it make sense?

Cooperation is not an 'all or nothing' proposition. A range of cooperative activities and levels of effort can be undertaken. The appropriate type of cooperation will be determined by hydrological, environmental, economic, social and political factors, which together determine the potential benefits and costs to be balanced in choosing a cooperative strategy.

"COOPERATION IS NOT AN 'ALL OR NOTHING' PROPOSITION."

In some basins, information sharing and basin-wide strategic assessments may be enough to promote better, more cooperative management. In others, joint actions might be needed on environmental flow regulation, water storage, and drought and flood mitigation in order to yield significant net benefits. A continuum of cooperative options[11] can be considered from *unilateral action* (independent, non-transparent national plans), to *coordination* (communication and information sharing), to *collaboration* (adaptation of national plans for mutual benefits), to *joint action* (joint plans for management or investment).

Unilateral action in a basin means that no efforts are being made to cooperate, or even communicate, over the management and planned development of the shared river. Not only does this behaviour fail to secure cooperative benefits, but it leads to situations in which riparian countries' development and investment plans can actually undermine one another. Unilateral plans are designed on the assumption that other riparians will not make new investments, abstractions, or water quality changes. The cumulative impact of uncoordinated changes can be to substantially diminish flows or degrade water quality to the point that all activities – and the health of the river system – may be compromised.

Coordination can be achieved by exchanging or cooperatively gathering information about a basin. In most basins, water resource managers have information only on the stretch of the river that falls within their territory. An exchange of basin-wide hydrological information could generate many benefits, such as improving flow forecasting, and flood and drought preparedness. Exchanging information on plans to develop the river can help basin planners in different countries avoid conflicting projects. Greater information symmetry may also help to build trust, confidence and a greater willingness to cooperate in the future.

Collaboration can be defined as the adaptation of national plans to enable benefits or diminish costs in another riparian country. Collaboration can be done through *ad hoc* adaptations of ongoing plans, or through portfolios of national projects developed with riparian consultation and a basin-wide perspective.

Joint action occurs when riparians act as partners in the design, investment and implementation of international river development. This level of cooperation is formalized by treaties. Benefit-sharing arrangements such as joint ownership and management of assets represent the greatest level of cooperative effort and require strong cooperation, capacity and institutions. Joint action might include private-sector engagement among co-riparian states, and state-of-the-art management and investment scenarios that could optimize direct as well as indirect benefits.

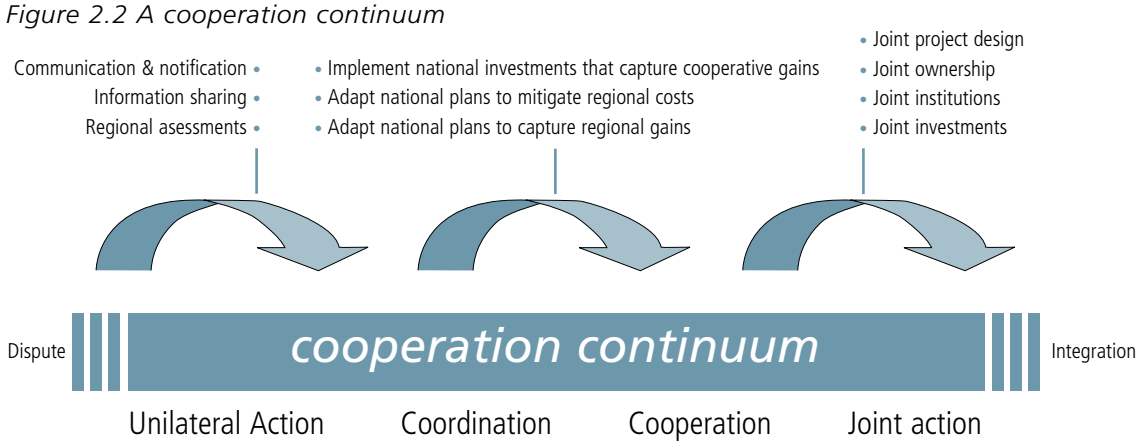
"JOINT DEVELOPMENT OF A RIVER SYSTEM REPRESENTS THE GREATEST LEVEL OF COOPERATION."

Figure 2.2 describes different levels of cooperative effort. It is important to recognize that this continuum is *non-directional*, *dynamic and iterative.* The continuum is *non-directional* because *more* cooperation is not necessarily *better*. The continuum portrays increasing levels of cooperative effort, but does not suggest that this is a goal in all basins. The continuum is *dynamic* because various points are appropriate for different activities at different times. Nations may adapt their activities to increase or decrease the intensity of their cooperation in response to new opportunities or developments within (or outside) the cooperative process. The continuum is *iterative*, because there are repeated, discrete opportunities for cooperation, and the success of earlier cooperation, particularly in terms of realized benefits, will likely promote increasing cooperation. In an iterative context, riparians are also aware that non-cooperative actions are likely to diminish future cooperation.

Cooperation has real costs in terms of time, money and human resources. If the costs of a particular level of cooperation outweigh the benefits (broadly defined to include, for example, the benefit of building trust in new partnerships) then that cooperative activity is not justifiable. Cooperative activities that are unduly costly could lead to a general disillusionment with cooperation, and undermine long-term efforts.

Identifying the right level of effort and investment in international cooperation is a key to capturing real gains without incurring excessive costs. This pragmatism will help generate political commitment and ensure that it is in all parties' interest to sustain cooperation.

Figure 2.2 A cooperation continuum



Source: Adapted from Sadoff & Grey (2005).

2.4 Fair sharing of benefits

To motivate and sustain cooperation, it is essential that all riparians perceive the distribution of cooperative benefits to be fair.

The cooperative management and development of river basins will generally yield real gains for a basin as a whole, but will not necessarily mean equitable shares for each country (or user group). If the majority of benefits accrue to one country (or one group), while the majority of costs are borne by another, a seemingly good project could generate losses for some stakeholders. A basin may be developed to maximize sustainability and total benefits, but if those benefits are captured solely where they are physically generated (e.g., the most productive hydropower or irrigation sites), then the basin-wide distribution of benefits may well be inequitable. It seems good to enlarge the 'pie', but the real motivator to cooperation is growth in each group's 'piece' of the pie.

When the physical distribution of benefits from a cooperative management and development scenario is seen as unfair, benefit-sharing mechanisms can play a pivotal role in motivating cooperation. Benefit sharing can be defined as any action designed to change the allocation of costs and benefits associated with cooperation. The costs of cooperation could be directly associated with the institutional or physical costs of river development and management (e.g., watershed restoration, dams or reservoirs to regulate river flow), or any other costs that the negotiating parties choose to include for consideration (e.g., rural electrification drawn from a hydropower dam). In most cases, sharing costs and benefits will require some sort of redistribution or compensation, as discussed below, which will be highly situation-specific.

The issue of fairness in the distribution of benefits is important at every level, but project-affected stakeholders (see Chapter 3) must be given particular attention with regard to fairness. Equitable benefit sharing at the local level, where immediate, identifiable impacts are felt, can in fact be more challenging than benefit sharing at the international level. Local benefit sharing can also have a greater immediate impact on poverty.

"THE ISSUE OF FAIRNESS IN THE DISTRIBUTION OF BENEFITS IS IMPORTANT AT EVERY LEVEL."

Distributive fairness, of course, is a normative question. International water law provides some guidance (see Chapter 4) by legitimizing the principles of 'equitable and reasonable utilization', and of 'no significant harm'. These principles are useful starting points for negotiations on the fair allocation of benefits. However, policy makers need to translate these principles into practice, and develop practical rules for benefit allocation and mechanisms for redistribution and/or compensation. Thus, it is useful to examine actual practices that have evolved to facilitate the cooperative management of international rivers. Seven basic principles of cooperative management commonly feature in international treaties[12] relating to the management of international water resources (in descending order of frequency):

- Compensation for lost benefits;
- Half of the flow apportioned to each riparian;
- Prioritization of uses;
- Payments for water;
- Absolute sovereignty of tributaries;
- Equal allocation of benefits;
- Relinquishing of prior uses.

There is a growing body of literature on benefit sharing,[13] most of which focuses on ways in which project revenues can be shared by affected groups. The benefits derived from water development have generally not been shared equitably, particularly with regards to people who are most directly impacted by the development itself.

Benefit sharing can be more than a tool for the *ex post* distribution or redistribution of the revenues from a given project – it can provide a framework of analysis for the *ex ante* conceptualization and design of projects themselves. A benefit-sharing approach enables the project's scope to be determined so that it captures adequate environmental, social and economic benefits to provide 'fair shares' to all relevant stakeholders. If it is not possible to provide adequate and equitable gains to all relevant stakeholders, the project is by definition unsound. To achieve fair shares, projects can be designed to incorporate supplementary investment components that could generate additional revenue streams. Once a range of appropriate benefits is identified, the project can then be structured explicitly to distribute those benefits equitably among stakeholders.

2.5 Mechanisms for benefit sharing

Opportunities and mechanisms for benefit sharing will be highly situation-specific and must be adapted to each social, political, economic and environmental context. Benefit-sharing opportunities can be found at all levels through a range of mechanisms (see Table 2.2). They can be structured through knowledge sharing, project design, revenue allocation, and institutional and policy development.

Box 2.1 Examples of mechanisms for benefit sharing[14]

Knowledge sharing

- Data and information sharing among riparians, sharing costs
- Cooperative assessments on the hydrological opportunities and dynamics of the basin, jointly generating knowledge, enhancing trust and building human capacity

Project design

- Core project design and location largely determines the physical benefits and the populations affected – both positively and negatively
- Ancillary investments – a broadened bundle of benefits; compensation or supplementary investments that (re)distribute costs and benefits more equitably

Revenue allocations and financial arrangements

- Allocating revenue streams – e.g., royalties, rents, carbon credits
- Providing direct payment for water use – e.g., municipal or irrigation supplies (where rights are already assigned)
- Providing direct payment for benefits – e.g., fisheries, watershed management services, beneficial changes in river flow regimes
- Providing compensation for costs – e.g., inundated land, pollution, loss of ecosystem services, harmful changes in river flow regimes
- Undertaking purchase agreements – e.g., for power, agricultural products (where terms of the agreement can be used to transfer benefits)
- Financing and ownership arrangements – e.g., joint infrastructure ownership and management

Institutional and policy development

- Operating procedures – e.g., dam operations to sustain flood recession agriculture or the productivity of fisheries
- Policy alignment and enabling environment – institutions and incentives to ensure benefits, e.g., legal, regulatory, land tenure, taxes and pricing, consumer protection
- Public-private partnerships – e.g., potential to leverage funds, expertise, integration

2.5.1 Knowledge sharing

Knowledge and information are valuable and costly. Cooperative activities that share knowledge and information, or jointly generate system-wide knowledge, can therefore be structured (i.e., paid for, provided or undertaken) as tools for benefit and cost sharing. Hydrological information can help riparians better manage water resources within their territories, it can help riparians better understand the impact of their actions on one another, and it can also help to identify cooperative opportunities for enhanced basin-wide management.

Furthermore a deeper, more transparent understanding of the dynamics of a shared river system will help diminish the asymmetries in information that can undermine riparian negotiations, and promote more sustainable and equitable outcomes.

"UNDERSTANDING THE DYNAMICS OF A SHARED RIVER SYSTEM PROMOTES MORE SUSTAINABLE AND EQUITABLE OUTCOMES."

2.5.2 Project design

The design and location of a project will determine the broad physical parameters of its benefits and costs. However the design specifications, its exact location, and potential compensating investments could all be reconsidered if the physical distribution of benefits were initially inequitable. Ancillary investments could be made to supplement the programme in order to construct a bundle of benefits that could be equitably distributed. Examples of ancillary investments include rural electrification associated with hydropower development, market roads associated with irrigation, or sustainable livelihoods investments associated with watershed management.

Bundling broader benefits can also be a mechanism for sharing benefits. The broader the range of benefits under discussion, the more likely riparians will be able to find a mutually acceptable configuration for sharing them. Unrelated investments (e.g., transport infrastructure, power grids) or areas of mutual interest (e.g., trade, immigration, communications, tourism and environmental protection) can be bundled with water use-related negotiations. Concerns regarding geopolitical and diplomatic relationships, public image and reputation might also influence states engaged in negotiating cooperative management of shared waters. The full range of benefit-sharing mechanisms can then be brought to bear on this broader bundle of benefits in order to find an acceptable solution.

"THE BROADER THE RANGE OF BENEFITS UNDER DISCUSSION, THE MORE LIKELY RIPARIANS ARE ABLE TO SHARE THEM."

2.5.3 Revenue allocation and financial mechanisms

Revenue streams that derive from a project can be shared with project-affected people or other stakeholders who bear some share of the costs of project development, but would otherwise not necessarily share in the benefits.

Direct payments for water can redistribute the benefits of water without the need to re-assign water rights. When water rights are clear, and parties agree that one riparian should access more water than they are legally entitled to, payments for time-bound water use rights can promote more beneficial water use without the need to formally transfer rights. International water markets can provide a flexible mechanism for realigning water use among riparians. The price and quantity of water use rights can be decided by market forces, or they can be negotiated. Agreements regarding

Photo 2.1 Logan fruit are loaded onto a Chinese vessel in the port of Chiang Saen on the Mekong river, northern Thailand. The port is at the forefront of the fast growing trade with China.

the price of water, the volume of water to be made available, and the eligibility of buyers affect the size and sharing of benefits derived from that water.

Payments for benefits (or compensation for costs) might be made in the context of a cooperative scheme. If riparians agree on a cooperative scheme that either benefits or harms one party disproportionately, payments can be made in compensation. For example, downstream riparians might agree to pay upstream riparians for watershed management if it brings disproportionate benefits downstream in terms of higher water quality or reduced flooding or sediment loads. Similarly, if a downstream riparian impounds water that backs into an upstream state, the upstream state could receive compensation for land inundation.

Purchase agreements can be structured as flexible tools for benefit sharing. For example, a riparian might build or upgrade a hydropower dam, and negotiate a purchase agreement that implicitly recognizes another riparian's interest in the river. If one riparian has water resources or hydropower capacity but insufficient national demand for water and/or power, while the other has meagre water resources and hydropower capacity but significant demand, both will benefit from this trade. The negotiated price can be used to share benefits – a higher agreed price, for example, would transfer proportionally more benefits to the selling riparian, while a lower agreed price would give more benefits to the buying riparian. A riparian upstream of the dam might enter into a purchase agreement that recognizes the positive value of its watershed management on the running costs and lifespan of the dam, or a downstream riparian might negotiate an agreement that reflects the positive and/or negative impacts of the dam on release patterns and sedimentation loads downstream.

When cooperative management calls for large-scale investments, the investment financing, ownership, and operating arrangements can be structured to share benefits among riparians. Joint

or coordinated financing of cooperative projects can successfully sustain cooperation by embedding benefit sharing into the deal structure. Jointly owned operating or holding companies (e.g., a joint power transmission company) can provide direct financial benefits and build trust through an ongoing partnership. This sort of prolonged partnership also allows for more adaptive management of the asset and greater flexibility in responding to challenges and opportunities for the river.

2.5.4 Institutional and policy development

The potential benefits of cooperation may fail to materialize because policies and incentives do not encourage beneficiaries to respond to opportunities. In these cases policy reform, awareness raising, capacity building, and technical support might all be important ancillary investments to ensure benefits and benefit sharing. This may be the case particularly in the context of national and local benefits – highlighting the importance of tailoring benefit-sharing strategies and mechanisms to different beneficiaries.

"INVESTMENTS IN INSTITUTIONS AND CAPACITY BUILDING MAY BE NEEDED TO ENSURE THAT BENEFIT-SHARING WORKS."

To ensure that the intended distribution of benefits can be implemented, investments in legal structures and protections may be needed. In some instances, the private sector could prove an important partner in providing the finance, expertise, or employment opportunities needed to structure and implement programmes that leverage the benefits of cooperative river management and ensure equity.

Operational policies and procedures in the timing of releases from irrigation or hydropower dams can have a profound effect on both upstream and downstream livelihoods. Careful attention to the needs of project-affected peoples can be central to finding an equitable distribution of benefits.

2.6 Applying benefit sharing at all levels

The range of benefit-sharing mechanisms can be applied at all levels, and should be applied with particular focus on project-affected communities and ecosystems. River management and development inevitably involves trade-offs. These trade-offs must be structured and implemented in such a way that all affected parties are treated equitably.

At the local level, affected populations and ecosystems must be the primary focus. Benefit-sharing mechanisms such as asset co-ownership, royalty payments and watershed stewardship payments can be structured to provide continuous revenue streams or benefits. Ancillary projects targeted to leverage opportunities for, and mitigate harm to, project-affected peoples and ecosystems might include community development funds, health and water posts, priority hiring in project labour and management, microfinance, and policy reforms such as land tenure. Not only would these sorts of targeted structures promote equity in the distribution of benefits, they could also serve to build sustainability and enhance development impact.

"PARTICULAR FOCUS SHOULD BE ON PROJECT-AFFECTED COMMUNITIES AND ECOSYSTEMS."

At the national level, decisions about project design and location will determine the physical occurrence of benefits and costs (e.g., employment opportunities, irrigation potential and inundation). Operational policies and ancillary investments, however, may be used to distribute benefits beyond the project area and across a broad range of economic actors (e.g., earmarking project revenues, rural electrification and energy access, dam operations for multiple uses, water supply and road access).

At the regional and transboundary level a broad range of mechanisms for benefit sharing is available. The choice of the mechanism will depend on the specific project in question, but joint institutions vested with adequate capacity and a strong regional mandate can facilitate a transparent distribution of benefits (e.g., joint asset ownership, regional power utility).

At all levels, benefit-sharing constructs must be tailored to specific values, priorities and opportunities. At the same time, it should be expected that these values, priorities and opportunities will change over time. Legal and institutional mechanisms for benefit sharing, discussed in Chapters 4 and 5, must therefore be flexible and robust enough to adapt.

"BENEFIT – SHARING CONSTRUCTS MUST BE TAILORED TO SPECIFIC VALUES, PRIORITIES AND OPPORTUNITIES."

2.7 Benefit sharing in practice

Benefit sharing can provide an equity-focused conceptual framework for cooperative projects, one that seeks to bundle a range of benefits for a range of stakeholders, and to structure a distribution of benefits that is considered fair.

In practice this means framing a cooperative project from a benefit-sharing perspective. It includes:

- seeking broad benefits and equitable benefit sharing early in project conceptualization;
- adapting the project design to expand benefits, where appropriate and cost-effective;
- explicitly structuring the distribution of benefits and costs after considering broad options for ancillary investments, sequencing of actions, ownership opportunities for project-affected people, sharing rents, subsidizing electricity or taxes, etc.;
- not forgetting opportunities during construction, and in eventual operations and maintenance.

It requires involving stakeholders as shareholders in the process and the project (see Chapter 3) including:

- identifying and involving stakeholders at the local, regional, national and international levels;
- considering the extent and significance of monetary and non-monetary benefits and costs from stakeholders' multiple perspectives;
- recognizing differing values and perspectives are essential to determining appropriate distribution of benefits;
- striving to align stakeholder incentives for success and sustainability.

It requires a persistent focus on equity, including:

- balancing the costs and benefits of cooperation for each stakeholder group;
- considering the principles upon which benefit sharing should be based;
- accepting that equity does not necessarily mean equality;
- striving for transparency.

It requires the establishment of robust mechanisms and institutions (see Chapters 4 and 5) such as:

- aligning institutions, policies, capacities and incentives to realize benefits;
- considering the full range of mechanisms at local, regional and national scales;
- striving for simplicity, transparency and durability;
- striving for adaptability, as values, priorities and circumstances will change over time.

Chapter 3

Stakeholders in Benefit Sharing and the Management Process

Transboundary water management processes are invariably complex and conflict-laden. Early and strategic engagement with a wide range of stakeholders can help achieve better management outcomes, avoid damaging conflicts and increase the benefit sharing achieved. Different forms of engagement are necessary for different types of stakeholders. Identifying stakeholders early in the process and determining when and how each group can most effectively be involved will further management objectives and ensure that costs and benefits are shared equitably among stakeholders.

3.1 Who are the stakeholders?

Transboundary waters affect peoples, institutions, and processes of development in many ways, and across boundaries and scales that include state-state, intra-state, civil society and local-level relations.

Stakeholders can be individuals, groups, organizations and institutions (formal and informal) either directly or indirectly concerned with transboundary water resources and their management. They include public sector agencies, private sector organizations, NGOs and external agencies as well as water users. They can be found in different spatial locations and at different governance levels, representing different interests, ethnic groups and genders. Furthermore, stakeholders may change over time, as new stakeholders emerge while others disappear from the processes.

"STAKEHOLDERS MAY CHANGE OVER TIME, AS NEW STAKEHOLDERS EMERGE WHILE OTHERS DISAPPEAR."

Given the number of broad categories of stakeholders, it is useful to subdivide them into internal and external stakeholders (internal or external to management processes) as well as into primary and secondary groups. This is a basic starting point for analyzing optimal benefit-sharing outcomes and will help us understand both how different stakeholders perceive benefits and costs and how they may make claims on different types of benefits.

3.1.1 Internal and external stakeholders

Internal stakeholders lie within the management institution or a set of collaborating institutions, such as governments, financiers and private sector partners. Internal stakeholders are those with direct responsibilities for designing, financing and implementing basin management. All other stakeholders are external, and can be either primary or secondary stakeholders.

Primary stakeholders

Primary stakeholders are those who directly feel the impacts of development processes, which usually – though not necessarily – involve changes to the external physical environments in which they live. These changes can have both positive and negative impacts on their lives and livelihoods.

Primary stakeholders are easy to identify, but often hard to engage given their dispersed and localized nature. Engagement may be facilitated through secondary stakeholders capable of representing and/or promoting primary stakeholder interests. Concerns most often expressed by primary stakeholders include the anticipated impacts of development projects, their perceptions of the impacts, and ways of mitigating negative impacts and enhancing beneficial impacts.

"PRIMARY STAKEHOLDERS, THOSE WHO FEEL IMPACTS DIRECTLY, ARE OFTEN EASY TO IDENTIFY BUT HARD TO ENGAGE."

Secondary stakeholders

Secondary stakeholders are not directly affected by developments; but they may have a stake in the outcomes of processes affecting primary stakeholders or an interest in transboundary water management at a higher-order policy level. They may be civil society organizations or associations, public institutions, or private-sector interests, such as chambers of commerce, business associations, businesses, or financial institutions. Public sector stakeholders can include elected representatives, local government and councils, the military, or international bodies such as the United Nations.

Secondary stakeholders are often intermediaries between those who feel the impacts of transboundary management processes, and the managers and policy makers who take decisions. They may support water development projects in the national or regional interest, or particular types of benefit-sharing arrangements. Alternatively, they may oppose elements of transboundary water management, such as the development of large-scale dams or power plants, or specific aspects of water-sharing arrangements.

"SECONDARY STAKEHOLDERS ARE NOT DIRECTLY AFFECTED, BUT OFTEN ACT AS INTERMEDIARIES."

The configuration of secondary stakeholder interests is usually complex, and capacity to identify and engage them all is limited either by the timescale of development or the knowledge of who they are. In many cases secondary stakeholders may not reveal their interests until well into project cycles, often because they were not aware of the planning stages where their input could have been valuable. This underscores the need for internal stakeholders to identify all potential stakeholders and ensure that they are aware of opportunities to express their opinions. Some basin managers develop comprehensive databases of secondary stakeholders.

Civil society secondary stakeholders are of particular importance given their principal role in representing the interests of affected communities – sometimes at the request of primary stakeholders, sometimes self-appointed. They may include the local or national media (which can be privately or state-run), academics, social movements, NGOs and trades unions. Their importance is frequently enhanced because, unlike primary stakeholders, they are often highly networked making their influence on development processes greater. Hence, under the procedures of many international financial institutions and the broader practice of encouraging participatory development, these stakeholders tend to wield particular power.

However, self-appointed secondary stakeholders may not stand for the interests of the primary stakeholders that they purport to represent. Also, there is the potential that primary stakeholders may not know the secondary stakeholders who may officially be considered to be their representatives. These challenges can partly be solved through an inclusive and participatory process of stakeholder identification and engagement. This partly ensures that primary stakeholders identify secondary stakeholders who represent their interests. Similarly, alliances and coalitions can be forged between primary and secondary stakeholders who share similar interests.

In the earliest stages of the Nile Basin Initiative (NBI), donors and governments recognized the importance of stakeholder involvement and established a Nile Basin Discourse to bring together elements of civil society across all 10 riparian countries (see Case 3.1).

"CIVIL SOCIETY SECONDARY STAKEHOLDERS ARE OF PARTICULAR IMPORTANCE WHEN REPRESENTING AFFECTED COMMUNITIES – SOMETIMES AT THE REQUEST OF PRIMARY STAKEHOLDERS, SOMETIMES SELF-APPOINTED."

Case 3.1 An inclusive discourse – stakeholder engagement in the Nile Basin[15]

The Nile Basin Initiative (NBI) strives to implement a Shared Vision: "to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources". *The underlying principles of cooperative action in the Nile Basin are benefit sharing and confidence building – with stakeholder engagement essential to both.*

Participation is structured directly into the NBI on two levels:

- At the regional programmatic level, through the inclusion of a wide range of stakeholder groups – from policy and decision makers, to small business men and women, to fishers and farmers, to religious and youth groups;
- At the project level, where relevant stakeholders participate in design and preparation activities through regular stakeholder consultations and public information processes.

In addition, an independent network of civil society organizations has been established to have influence on, but be independent from, the intergovernmental NBI. This network, the Nile Basin Discourse (NBD),[16] is designed to bring the voices of both primary and secondary stakeholders into NBI activities. The NBD acts as an umbrella organization for national civil society organizations in each basin country where Country Coordinating Institutions (CCI) oversee the activities of National Discourse Forums (NDFs). The Discourse Desk, located in Entebbe near the NBI Secretariat, acts as the secretariat for the NBD. It coordinates overall funding, administration and technical support, and serves as the key contact point with the Nile Basin Initiative.

3.1.2. Stakeholder identification

A key first step in identifying stakeholders is the creation of a framework for analysis that identifies stakeholder categories and maps their relative power, influence, interests, and potential contribution and role in different management stages. The aim of this process is to assess the importance of each stakeholder to the success or failure of each stage of the development process, and thereby guide strategies for engagement.

Table 3.1 shows one such approach. It provides an overview of primary and secondary stakeholders by spatial location and interest at particular stages in a project cycle. Such an exercise can be done for all elements of a larger transboundary water management process and combined to provide a global picture of stakeholder interests.

Table 3.1 Mapping of stakeholders and their involvement at different stages of a project, from initial stakeholder identification through project implementation

	MANAGEMENT STAGES			
	IDENTIFICATION	DESIGN	FINANCING AND PLANNING	IMPLEMENTATION
PRIMARY				
Types of primary stakeholders by geographical location and interest	• Leaders of communities affected +/- notified of projects and programmes • Leaders of local representative institutions identified • Representation of gender and minority ethnic groups identified/ ensured	• Household-level analysis of (gender disaggregated) perceptions and needs/ impacts • Key livelihoods groups contacted and nature of engagement in next phases thought through	• Local representatives provide liaison with management authorities, possibly mediated through secondary stakeholders • Community leaders included in discussion forums and provide input into local management arrangements	• Community leaders and other representatives perform specified roles in implementation and management activities including mobilization of local populations
SECONDARY				
Types of secondary stakeholder by categories and subcategories	• Local civil society groups and community organizations contacted at different levels according to thematic and geographical interest • Specialist interest groups identified and contacted • Local government informed of proposed management arrangements	• Special interest groups (e.g., wildlife, poverty, gender, minorities) invited to submit opinions on proposals • Development professionals associations engaged in design processes	• Financial institutions seek outcomes of earlier engagement processes to ensure compliance • Organizations involved in related sectors invited to engage detailed planning processes	• Consultants engaged in rolling out of programmes • Government agencies involved in specific implementation activities, including provision of public information • Local and regional authorities working with private sector contractors on infrastructure development

Stakeholder engagement is a continuum from the initial development of communications channels and provision of information, to public and private consultation, participation, and then possibly to stronger and longer-term engagement through partnering.

On the basis of Table 3.1 it is possible to start mapping who is likely to be involved, where and how in different processes. The identification of key stakeholder interests, reflected at different stages in management processes, is crucial to designing an effective engagement strategy. Understanding these dynamics enables better targeting of information to stakeholder categories, and ensures that engagement processes are efficient in reaching the right groups at the right times.

"STAKEHOLDER ENGAGEMENT IS A CONTINUUM."

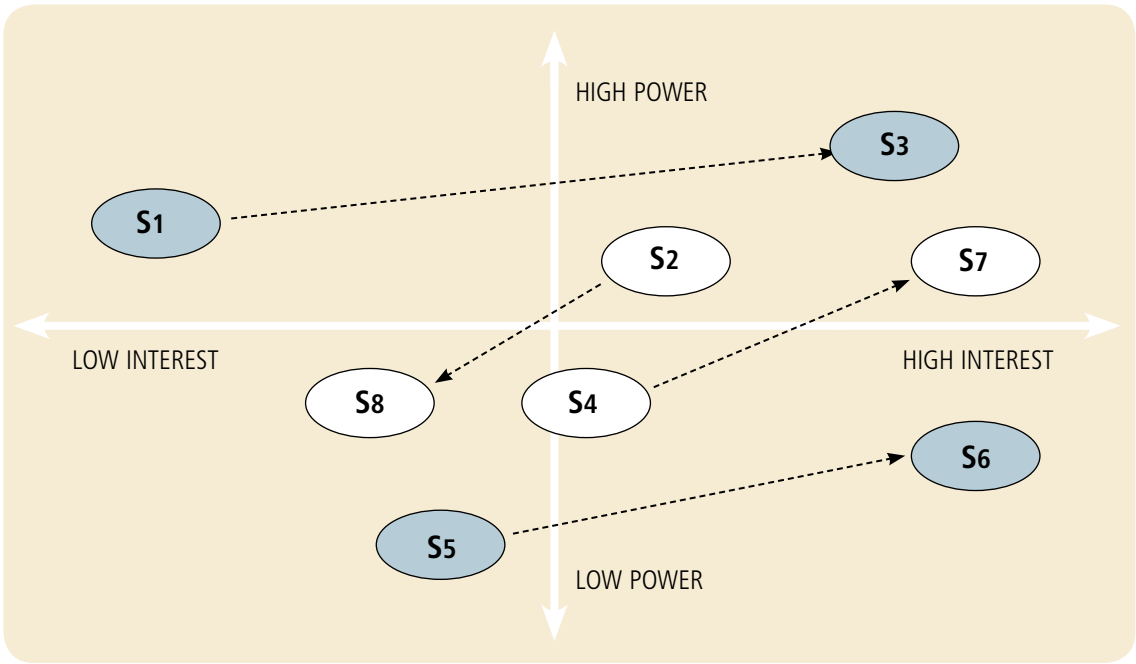
3.1.3 Mapping power and interest

A second step – mapping power resources and interests across a schematic (see Figure 3.1) – can help in projecting possible patterns of engagement, including when and how to bring in different types of stakeholders. This kind of schematic is a tool for consultation processes and for helping internal stakeholders to understand who the external stakeholders are. It illustrates different trajectories in interest and power over the course of a management process.

"MAPPING POWER RESOURCES AND INTERESTS CAN HELP IN PROJECTING POSSIBLE PATTERNS OF ENGAGEMENT."

Photo 3.1 His Excellency Olusegun Obasanjo, President of Nigeria, at the Damaturu Summit of the Govenors where the Catchment Plan for the Komodugu Yobe river basin was signed.

Figure 3.1 Mapping power and interest for different stakeholder groups and their trajectories over the course of a project



S1 to S3: This trajectory represents the evolving power and interest of a key secondary stakeholder group during the development of transboundary water management in a specific basin. In the Nile, this might be the interest of a key newspaper on a particular dam project or the concerns and interests of a major national association working on environmental impact issues.

S2 to S8: This represents the declining power and interest of a primary stakeholder, perhaps as project plans change, and the nature and extent of interests are shrunk as a result of the actions of a secondary stakeholder, for instance, who might oppose the implementation of a large-scale irrigation scheme.

S4 to S7: By contrast, this is the burgeoning interest and power of a primary stakeholder group as a programme of watershed management develops in a highland watershed, perhaps aided by the growing power and interest of secondary stakeholders.

S5 to S6: This trajectory is the development over time of a secondary stakeholder interest in an environmental protection component of a large-scale programme. As this interest develops, its power to influence can grow as alliances are formed with both primary stakeholder groups and other secondary stakeholder networks.

Unpacking what is meant by power in the context of transboundary water management and stakeholder engagement is critical.

3.2 When and how to engage stakeholders

Mapping the interests and influence of stakeholders at different stages in management processes, as shown in Table 3.1 and Figure 3.1, can assist in determining when and how stakeholders can best be engaged.

3.2.1 Engagement in stages

The complexities of stakeholder engagement suggest a mosaic of approaches and sub-stages, often overlapping according to who is being brought into the process, when, and how. It should not be seen as a linear process of shared visioning, consensus building, institution building, identification of interests, and engagement.

Financial constraints require analysis of the likely costs and benefits of stakeholder engagement in different parts of the development process. To identify the needs of, and advantages of involving, each stakeholder group, ask at each stage:

- Should information be provided now to these stakeholders in order to capture their involvement later on?
- Should the views of this group be sought on different management approaches as part of the design process?
- Should this group be engaged more formally in the longer term across a range of management milestones from design to planning and implementation?
- Or is this stakeholder group, in fact, sufficiently critical to development outcomes to be made a full development partner, in effect being internalized to the process?

Questions that can be used to assess different stakeholder categories in terms of their potential contribution, power/influence and interest in relation to different stages include:

- Does this group have broad relevance and representation at a local level?
- What is the perceived and likely degree of its impact?
- How much influence does it have over management processes?
- What contribution (e.g., insight, data, and management capability) might it make to the process and to management outcomes?

Answering these questions will allow managers to score different categories of stakeholders against the most appropriate methods and timing of their engagement.

"FINANCIAL CONSTRAINTS REQUIRE ANALYSIS OF COSTS AND BENEFITS OF STAKEHOLDER ENGAGEMENT."

3.2.2. Engagement pathways

Effective engagement requires a baseline level of public information that can generate confidence in the process itself and ensure that the future development process is easily understood. This should enable stakeholders to:

- understand *why* they are being included at a particular stage;
- understand *how* their engagement as recipients of information, or as fully-consulted partners, can feed back into management processes and lead to change.

"A BASELINE LEVEL OF PUBLIC INFORMATION CAN GENERATE CONFIDENCE IN THE PROCESS ITSELF."

The second point is important in distinguishing between passive participation and active participation. In many cases participation is passive through receipt of information, with few if any channels provided for active engagement on the basis of this information. Providing information alone is often regarded as paying 'lip service' to engagement, rather than a genuine attempt at learning from stakeholder experience in order to help shape processes and outcomes.

Active participation provides a mechanism in which provision of information is followed by feedback (e.g., consultations, surveys, alliances or even informed consent). It provides for greater integration of interests and concerns. Yet this level of engagement also requires a robust management process that can deal with grievances, power interests, and possibly conflicting messages emanating from different stakeholder groups. Engagement at this level becomes something of a brokerage operation. In many instances these processes are government-led and can become highly politicized.

"ACTIVE PARTICIPATION PROVIDES FOR GREATER INTEGRATION OF INTERESTS AND CONCERNS."

Case 3.2 Information and participation in the North American Great Lakes [17]

Recognizing the importance of transboundary civil society engagement in the review process of the Great Lakes Water Quality Agreement, the Great Lakes International Joint Commission (IJC) in partnership with mayors from the Great Lakes-St Lawrence River basin area held a series of 15 public meetings in Canada and the USA. Through these meetings, web dialogues, e-mail, fax and mail messages, inputs from more than 4,100 people were synthesized into a report by the IJC and submitted to the two governments.

Stakeholders expressed their strong support for the objectives of the Water Quality Agreement and called on all levels of government to reinvigorate their efforts to implement it. Concern focused on the impact of aquatic invasive species, slow progress in delisting Areas of Concern, municipal sewage and uncertainties regarding the potential impact of climate change. Stakeholders asked for increased information and public education on the Great Lakes ecosystem, and continued opportunities for involvement in the review process.

Stakeholder engagement is also being ramped up at the national and state or provincial levels in the Great Lakes region. The USA recently solicited public input into the US Great Lakes Regional Collaboration's Strategy to Restore and Protect the Great Lakes; and a three-month public consultation process on the 2007 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem commenced in March 2007.

Examples of levels of engagement on engagement pathways include:

Information

The goals and objectives of transboundary water management should be widely disseminated. One-way factual information flow can raise awareness of current and future processes, stimulate debate on the merits and demerits of different approaches, and trigger responses from and within

wider civil society. Information should help in the process of establishing a second phase of engagement. Information should be disseminated in a consultative manner through various forums such as public meetings, awareness campaigns, web dialogues and articles in the national media, thereby increasing awareness and stakeholder engagement.

Consultation

Consultation not only delivers information to stakeholders, but elicits the views of stakeholders in order to assess the full costs and benefits of water management and development projects. The extent of consultation will be in part a response to levels of interest, but will also result from strategic stakeholder identification and the engagement of powerful interests – perhaps external to the basin.

Participation

The need for substantive participation by specific stakeholder groups often becomes apparent through strategic stakeholder identification and/or the process of consultation. Where further engagement is merited, specific groups can, for example, be involved in design processes (at an early management phase) or in processes of implementation, perhaps as part of a consultative body.

Development partners

A full development partner in transboundary water management processes implies an agreed set of goals, outputs and objectives. At this level of engagement, stakeholders are brought into development processes, perhaps through multi-stakeholder forums, working groups or management steering committees.

"INFORMATION SHOULD BE DISSEMINATED IN A CONSULTATIVE MANNER THROUGH VARIOUS FORUMS"

3.2.3 Engaging civil society

Of particular importance is the planned engagement of civil society. This process needs both to avoid perceptions of co-option (by government in particular) and allow civil society to maintain autonomy, that is to be able to opt in or out without sanction. This is important for issues of legitimacy and to ensure that potentially significant, yet relatively powerless, stakeholders are not dissuaded from engagement.

"CIVIL SOCIETY ENGAGEMENT NEEDS TO ALLOW CIVIL SOCIETY TO MAINTAIN AUTONOMY."

Table 3.2 below indicates the various stages of transboundary water management processes, and possible opportunities for the involvement of civil society.

The process must define realistic goals and achievable objectives, and deliver honest assessments of the costs and benefits of engagement on a regular basis. By cyclically feeding back what is being learned and how it is being learned, managers can ensure that the process itself becomes learning-based and not rigid. In some cases, such as the Nile Basin Discourse, institutional structures can be established to provide a basin-wide network for civil society engagement that are both responsive to invitations to engage and robust enough to set out their own agenda for engagement (see Case 3.1).

3.2.4 Engaging third parties

The support of a third party may help facilitate development of cooperative transboundary institutions, including those capable of developing stakeholder engagement. In environments where institutions are highly developed this may not be necessary, but in complex river basins where the development of institutions at a national level, let alone transboundary levels, may be rudimentary, a third party can be of enormous assistance. In addition, in complex political environments, where latent and manifest political tensions exist between riparian states, an international third party acceptable to all riparian countries may be of crucial importance for the implementation of transboundary water management processes.

Third-party support can help shape the discussions and approaches surrounding stakeholder engagement, including bringing in experience from other river basins. It can also be critical to funding the initial stages of stakeholder engagement (see Table 3.3).

"THIRD PARTY SUPPORT CAN BRING IN EXPERIENCE FROM OTHER RIVER BASINS."

Institutions such as the World Bank, United Nations Development Programme (UNDP), the European Union (EU), the Global Water Partnership (GWP) and IUCN can provide significant political clout in encouraging stakeholder engagement and overcoming particularly intractable engagement issues. More importantly, a third party can often be instrumental in making vital links between regional managers of transboundary waters, providing alternative policy options, and facilitating stakeholder engagement processes.

Table 3.2 Structured roles for civil society at different stages of transboundary water management processes

STAGES OF PROCESS	POSSIBLE ROLE OF CIVIL SOCIETY
Initiating stage	Civil diplomacy between neighbouring groups; construction of dialogue through networks of civil society groups at a regional level.
Institutional management	Observers to the main meetings; development of networks to feed into policy development and data collection.
Programme implementation	Capacity building, independent monitoring of process; assistance in feedback of ideas and impacts from local communities.
Investment in water management works	Implementation and co-funding, where appropriate; provision of technical expertise in development of management works including social and environmental impact assessment.

Source: ODI/ARCADIS/EuroConsult, 2001.[19]

Table 3.3 Facilitating roles for international third parties

PROCESS STAGES	POSSIBLE ROLE OF THE INTERNATIONAL THIRD PARTY
Initiating stage	Promote, coordinate and support initiatives by organizations to identify and engage stakeholders in regional water resources management; serving as a source of arbitration where disputes arise; promoting awareness of principles on equality, transparency, participation and 'good governance', including benefit-sharing concepts.
Institutional management	Independent monitoring of the process of stakeholder engagement, including key issues of accountability, participation, legitimacy and representation; further develop agreed concepts of equitable benefit sharing.
Programme implementation	Develop neutral standards and generic tools for stakeholder identification and facilitation between stakeholders over specific resource management issues.
Investment in water management works	Leverage financing for weaker riparians and involvement of stakeholder groups in specific investment projects.

Source: ODI/ARCADIS/EuroConsult, 2001.[20]

3.3 A road map for engagement

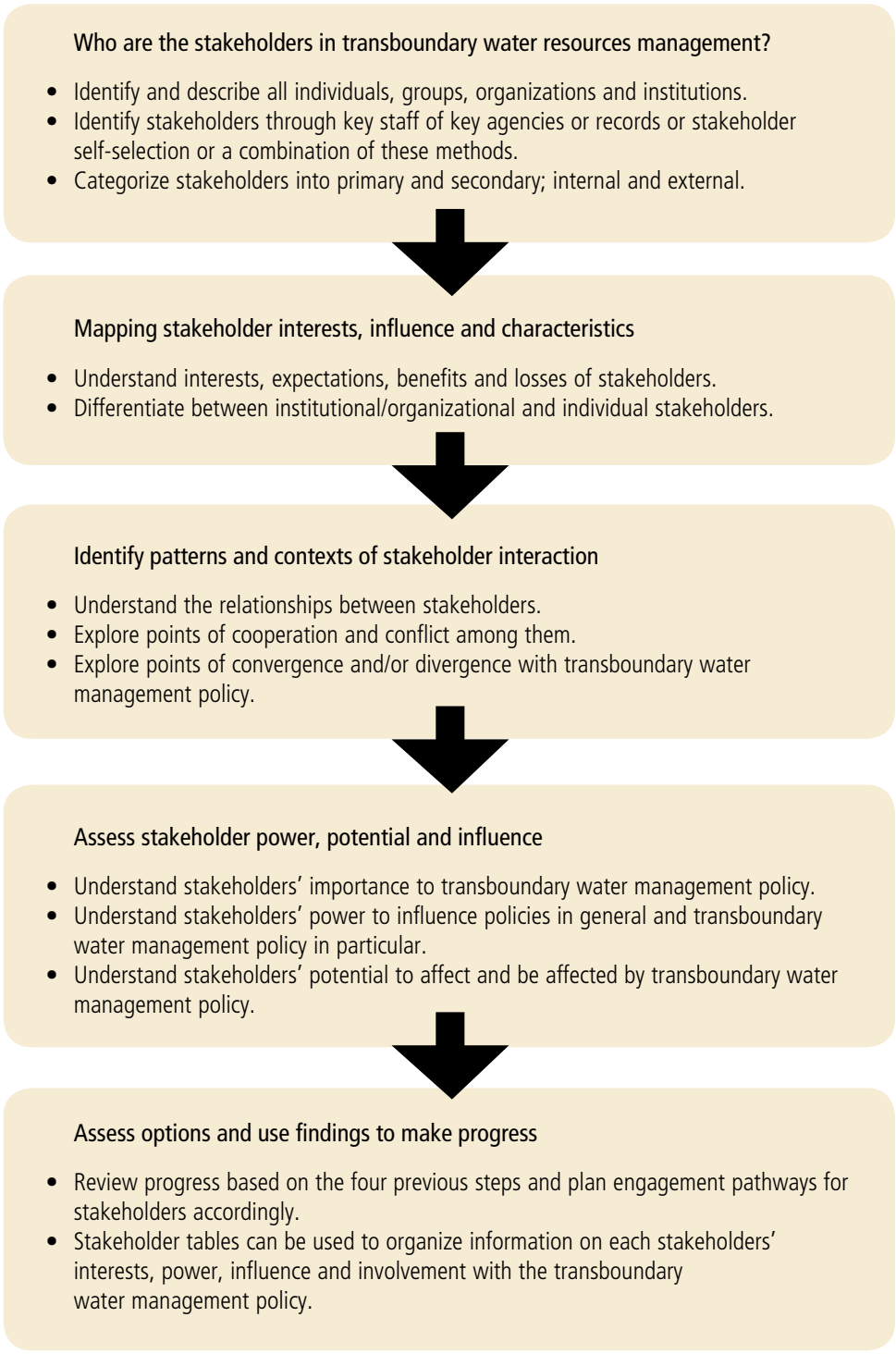
Building ownership of water management processes among stakeholders of a basin is perhaps the primary challenge for any transboundary institution. A supranational management institution can foster ownership among riparian states. However, the regionalization of water management is likely to cause great concern among individual stakeholder groups. Under such circumstances it is critically important to engage regional-level civil society.

"IT IS CRITICALLY IMPORTANT TO ENGAGE REGIONAL-LEVEL CIVIL SOCIETY."

The appropriate engagement of all stakeholders, and civil society groups in particular, is essential to build confidence, instil ownership and ensure the sustainability of transboundary water management processes.

Figure 3.2 provides an overview of the process of stakeholder identification and engagement that can be applied at various levels of transboundary river basins, from the local to the regional level (while recognizing that there are overlaps and interdependencies at different levels). This is aimed at ensuring that all stakeholders within the transboundary river basin are identified and engaged effectively in transboundary river basin management.

Figure 3.2 Steps for stakeholder identification, stakeholder mapping of interests and assessment of the process.



Chapter 4

Legal Frameworks for Transboundary Cooperation

Integrated water resources management, processes that promote the coordinated development and management of water, land and related resources at the river basin level,[20] requires an efficient legal framework to provide clear rules and procedures. The role of law is important at all stages of the planning, design and implementation of water management systems. A number of concrete legal issues must be addressed, such as ownership of the water, shared responsibilities, possible injuries for actions and uses by one state, mechanisms for cooperation among riparian states, allocations and restrictions for different uses, and methods for peaceful settlement of disputes. Applying an appropriate legal framework promotes efficient management and helps avoid or settle conflicts between competing water users and their interests.

"AN APPROPRIATE LEGAL FRAMEWORK PROMOTES EFFICIENT AND EFFECTIVE WATER MANAGEMENT."

This legal challenge, which is already difficult within one state, becomes even more complex when water resources are divided by international boundaries. In such cases, a successful management system cannot be set up by the rules of a single state, but must be developed jointly by the states concerned. Furthermore, since a river or lake may form the border between countries, or may cross the border, or both, legal frameworks for transboundary water resources must be adapted to different situations.

4.1 The legal basis for transboundary water management

Water law creates the backbone of a transboundary water management system. It should exist and be applied at all levels: international, national and local. The relations between states that share water are regulated at the international level by an emerging regime of international law on freshwater which is based on international treaties, declarations, customary rules, and general principles of international law.

"WATER LAW SHOULD EXIST AND BE APPLIED AT ALL LEVELS, INTERNATIONAL, NATIONAL AND LOCAL."

At the national and local level, international law on freshwater needs to be translated into concrete rights and obligations for individuals and institutions within the state. This is achieved through national and local water laws that are put in place to implement an international legal framework. International law, together with these national and local water laws, form the legal basis for transboundary water management.

4.1.1 International treaties and agreements: where legal principles and customary rules have been codified

In order to understand the current legal regime that regulates a transboundary water resource, water managers must analyze existing international legal treaties.

Existing treaties vary in their geographical coverage, in their area of primary focus, and in the scope of their provisions and institutional frameworks. Regarding geographical scope, a multiplicity of global, regional, multilateral, bilateral and river basin agreements have been developed in the past (see Box 4.1). Early international agreements focused mainly on navigational uses. Later agreements included regulation of the management of water resources for other specified purposes such as irrigation, industrial production or flood control. Most recent agreements try to apply a holistic approach that includes environmental and equity concerns. When assessing the existing legal regime for transboundary waters, it is necessary to evaluate whether there are current international agreements that apply to the water resource in question and have an influence on its management.

Box 4.1 Types of international agreements

The United Nations Convention on the Law of the Non-Navigational Use of International Watercourses is the only *global* agreement that focuses on the management of international watercourses, their conservation and use for purposes other than navigation. While this treaty is not yet in force, which means that it is not binding for any country, it plays an important role in codifying a series of principles and rules that can serve as guidelines to establish a regime for shared water resource management.

The Revised Protocol on Shared Watercourse Systems in the Southern Africa Development Community (SADC), or the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes are examples of *regional* agreements which deal with international water resources. Covering the territories of the members of the UN Economic Commission for Europe, United States and Canada, the purpose of the UNECE Water Convention is the conservation of shared water resources through a framework under which specific protocols (e.g., the 1999 Protocol on Water and Health) as well as river basin agreements can be negotiated.

In many international *river basins*, agreements have been made to establish transboundary commissions with specific mandates regarding the management of shared water resources. Examples include the Convention on the Protection of the Rhine, the Convention on Cooperation for the Protection and Sustainable Use of the River Danube, the Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, and the Protocol for Sustainable Development of Lake Victoria Basin.

International treaties play an important role in transboundary water management because negotiation of them enables states to find compromises among different interests and to codify clear rules, principles and procedures on how water and the benefits of water resources development should be shared. International treaties will not prevent all disputes between states that share water. They are absolutely necessary, however, for determining the 'rules of the game' that enhance legal security and reduce the probability of water disputes arising between sharing states.

Not every shared basin falls under an international agreement and too few of the existing agreements set a robust legal framework for integrated water resources management. In developed countries, many international agreements have been established to regulate shared basins. For example, Europe has four river basins shared by four or more countries that are regulated by no less than 175

treaties. While some of these treaties have been updated, other older treaties do not cover the scope of modern treaties. In developing countries, regulation of shared water resources is less common. For example, Africa has a vast and complex system of river basins, but relatively few treaties dealing with their use. Thus, the priorities for water managers and decision makers should be:

- development of treaties for those international water resources which are not yet covered by an agreement; and
- updating of existing treaties to ensure that they promote integrated, sustainable and equitable water management, including adequate flexibility to respond to changing or unforeseen circumstances (e.g., the uncertainties of climate change).

4.1.2 Customary rules, general principles of law and soft law: where to find legal norms in the absence of international treaties

In the absence of an international treaty, states can use customary rules, general principles of law, and non-binding legal instruments and initiatives to define the legal relations between neighbouring countries.

Customary rules are created through a process of consistent reapplication of certain practices that states recognize as obligatory when using shared waters, negotiating international agreements, implementing management schemes on the ground, or resolving disputes of transboundary water conflicts. Customary rules (e.g., the rule *pacta sunt servanda* which means that treaties have to be fulfilled) are binding norms of public international law. Although they are not necessarily written down by the states in the context of shared water management, these norms are applied by states, as they are considered legal obligations.

The use of general legal principles from international law is a means of addressing the gaps in international treaties that have not yet been filled by the evolution of customary rules. These principles are drawn from analogies with domestic laws or international case law and represent rules of procedure, evidence and jurisdiction that are common to the major legal systems. Customary rules and general principles of law have led to the development of substantive and procedural rules by which states coordinate their different economic, social and environmental interests.

"IN THE ABSENCE OF AN INTERNATIONAL TREATY, STATES CAN USE CUSTOMARY RULES, GENERAL PRINCIPLES OF LAW, AND NON-BINDING LEGAL INSTRUMENTS."

In contrast to international treaties, customary rules or principles of international law, instruments such as declarations, codes of conduct, guidelines or high-level international conference statements do not create binding rules and obligations for states (see Box 4.2). The legal principles reflected in these initiatives are not law but rather 'soft law'. Soft law can be used by states to develop and test new legal norms before they become binding, or as a potential resource from which ideas for negotiating new transboundary management schemes can be drawn.

The processes for developing soft law give it particular importance. Such non-binding legal instruments are created through conferences like the World Water Forum or initiatives like the Global Water Partnership (GWP), which are more dynamic than traditional international lawmaking processes and often more directly linked to societies. These forums involve a broad range of actors, from scientific organizations and academic specialists, to NGOs and industries, to governmental agencies. Each can influence the development of soft law by presenting their political perceptions

or scientific research results to a larger audience, by lobbying states to apply certain policies, or even by directly drafting certain soft law instruments.

Despite its great importance, soft law does not replace binding norms of international freshwater law. Rather it plays a complementary role in creating, enhancing or interpreting the emerging international legal framework for shared water resources.

"SOFT LAW INSTRUMENTS CAN BE USED TO DEVELOP AND TEST NEW LEGAL NORMS FOR TRANSBOUNDARY WATER MANAGEMENT."

Box 4.2 Non-binding instruments and shared water management

In 1966 the International Law Association (ILA), a non-governmental organization, adopted the Helsinki Rules on the Uses of the Waters of International Rivers. This is one of the first and most-cited texts that codify a set of principles of international freshwater law. Although the International Law Association has no legal competence to directly create binding rules, the Helsinki rules can be considered an important basis used by other organizations and initiatives to further develop international freshwater law. In the early 1980s, the International Law Commission (ILC), a UN body with a mandate to codify rules of international law, began to evaluate the progression of international law for watercourses and developed a set of draft articles later used as a basis for the final elaboration of the UN Water Convention of 1997.

The Dublin Conference on Water and the Environment in 1992 adopted the Dublin Statement on Water and Sustainable Development, which influenced the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 and Agenda 21 by highlighting the importance of a more comprehensive and holistic approach to water management for sustainable development. In one of its four principles, the statement also calls for '…water management to be based on a participatory approach, involving users, planners, and decision makers at all levels'. Despite their status as legally non-binding, such statements set examples for best practice and standards of good governance.

4.1.3 The customary rule of equitable utilization: from absolute territorial sovereignty to equitable utilization

'Equitable utilization' is one of the most important customary rules for the regulation of shared water resources. It responds to the deficiencies of other approaches, such as prior appropriation or absolute territorial sovereignty, which grant exclusive water rights to riparians. Taking a prior appropriation approach means that the riparian first in time to appropriate water (e.g., by diverting it) acquires a vested right to continue to use the water against the claims of all other riparians. In reverse, it also means that conserving and not using water gives other states the chance to obtain an exclusive right. This creates a fear among states that they risk losing water rights, is a disincentive to sharing of resources, and encourages a race to exploit them as fast and as much as possible.

Territorial sovereignty again holds that every state is sovereign over the space submitted to its jurisdiction. This means that it has in principle the right to utilize all natural resources located in its

territory according to its own needs and preferences. This right finds its limits, however, if a water resource is shared with another equally sovereign state that also claims the right to use the water for its own needs. The bottom line is a conflict of rights that exclude each other if the states fully insist on them and reject any compromise.

In order to avoid such competition and disputes over water use, which can affect the quantity and quality of shared waters, and to achieve the best overall result, states need to collaborate and consider the interests of other states. In this context, it is increasingly recognized that a state has not only the right to use its own natural resources, but also the duty not to cause significant harm to other states when using its resources. This concept has led to the development of the customary rule of equitable utilization.

"IN ORDER TO AVOID DISPUTES OVER WATER USE, STATES NEED TO CONSIDER OTHER STATES' INTERESTS."

Equitable utilization is based on the notion of equality of rights. Equality of rights must not be confused with equal division of a shared water resource among riparian states. Instead, it requires only the recognition and balancing of reasonable uses of, and/or benefits from, shared water resources by the states. This creates two challenges: (a) the identification of those water uses that are reasonable and therefore need to be balanced; and (b) an assessment of which use deserves priority.

"EQUALITY OF RIGHTS MUST NOT BE CONFUSED WITH EQUAL DIVISION OF A SHARED WATER RESOURCE."

Recognition of reasonable uses

Since shared water resources are so diverse, it is impossible to define up front what reasonable use will mean for all possible cases. A state's use of a water resource might be reasonable in one case, but not in another. However, despite this vagueness, the rule of equitable utilization has a practical meaning. While deciding what is reasonable depends on the circumstances of each case, the method of making this decision is clear. Both the benefits and the costs of a particular use must be taken into account:

- If a use causes significant harm to one of the states, such a use will be determined as unreasonable. However, it is important to understand that this is not meant to be an absolute obligation which prohibits all transboundary harm. Instead, depending on the circumstances, a certain level of harm to neighbouring states (whether it might be inefficient use or pollution of a water resource) can still be acceptable as long as a state uses due diligence and does its best to control avoidable harm.
- If a use causes no harm or no significant harm, customary rules and non-binding legal instruments can help analyze what is considered reasonable (see Box 4.2).

Policy documents and soft law instruments set certain standards, which can change and evolve over time. For example, states are requested to avoid unsustainable exploitation of water resources, and to ensure adequate supplies of good quality water for all people while preserving ecosystem services. These standards, however, must be seen in view of the technical and financial capacity of a state. This means that 'reasonableness' does not necessarily require the best possible use.

Balancing reasonable uses

Once it is clear which uses can be considered as reasonable, it still must be decided how to balance conflicting uses. The advantage that one state gains by a particular use must always be valued against the disadvantage and level of harm caused to another state. How to weigh these interests depends again on the individual case. Certain needs might be given priority under particular circumstances, while they are given less weight in a different context.

The 1997 UN Convention on the Law of the Non-Navigational Use of International Watercourses provides guidance on relevant factors that should be taken into account when balancing reasonable uses of a shared water resource. Although not an exhaustive list, these include:

- geographic, hydrographic, hydrological, climatic, ecological and other natural factors;
- the social and economic needs of the states;
- the population dependent on the watercourse in each state;
- the effects of the use or uses of the watercourse in one watercourse state on other watercourse states;
- existing and potential uses of the international watercourse;
- conservation, protection, development and economy of use of the water resource of the watercourse and the costs of measures taken to that effect;
- the availability of alternatives of corresponding value to a particular planned or existing use.

No use enjoys inherent priority over other uses, but vital human needs must get special attention. These human needs must not be understood as purely economic and social. The protection of the shared water ecosystem can also be directly linked to ensuring the vital human needs of a country, and therefore possibly outweigh economic interests.

In practice, the requirement that state interests must 'only' be balanced has another implication. International law does not provide riparians a veto over water development by other riparians. States do, however, have a duty to cooperate (see Section 4.2) which obliges them to take one another's claims into consideration.

Role of NGOs and CSOs in the process

NGOs and civil society organizations (CSOs) can be important actors in determining what uses are reasonable and how they can be balanced. They can have a general influence on the development of soft law, and thus on the standards that describe 'reasonableness'. In their role in representing different stakeholder groups, they may have a mandate to raise awareness for specific interests. Through their advocacy work, they can ensure that the importance of these interests come to the fore during the balancing process. These mandates, however, require that public participation is taken seriously.

4.2 International law in practice: how the international legal framework is implemented at the international, national and local level

At the international level

When dealing with international law in practice, a number of peculiarities must be kept in mind. The main sources of international law – treaties, and their provisions – are not immediately binding on a state. Once signed, the text needs an additional procedure, ratification, accession or adhesion. This process gives official sanction or approval to a treaty, usually through adoption by the national legislature and incorporation of the treaty's provisions in national laws. In addition, other require-

ments may be stated in the treaty for its entry into force (e.g., the ratification by a certain number of other parties).

In order to make international water law effective in practice, states have to agree on mechanisms for dispute settlement as well as enforcement instruments that respond to non-compliance.

"INTERNATIONAL TREATIES AND THEIR PROVISIONS ARE NOT IMMEDIATELY BINDING ON A STATE."

Binding obligations under international law are only a useful policy instrument if states actually comply with them. In this regard, it is important to determine who complies and who does not comply. While international courts (e.g., the International Court of Justice) already exist, they are able to interpret the law and make decisions only if the countries involved agree to take their cases to such a forum. In the absence of an independent 'world court', it is important that the states agree, in an international agreement, or *ad hoc* once a conflict has arisen, on a dispute-settlement mechanism. In addition, states must agree on adequate means to enforce the decision of such an authority; the principle of good faith is the only guarantee that a state will adhere to a decision by an international court.

Even if there is compliance, international law still regulates only the rights and obligations among states, or between states and international organizations; it does not regulate the relations between states and individuals, or individuals among themselves. Therefore, states must ensure the implementation of international law at all levels: at the international level where the states cooperate and stick to their obligations; at the national level where international law is incorporated into national laws creating obligations and rights for individuals; and at the local level where national laws are applied by society.

At the national and local level

The implementation of an international legal framework at national and local levels can only be achieved if there is flexibility that allows different responses appropriate to national contexts. The challenge, however, is not only to be flexible, but at the same time to be precise and consistent enough to avoid ambiguity in the interpretation and application of the international legal framework. In other words, the necessary flexibility should not compromise legal security, which requires a certain degree of predictability.

"NECESSARY FLEXIBILITY SHOULD NOT COMPROMISE LEGAL SECURITY WHICH REQUIRES PREDICTABILITY."

Decision makers at all levels can achieve consistency and legal security in different ways. They can initiate regular dialogues to discuss policies and legislative approaches, or go as far as harmonizing policies as well as legal and institutional regimes. The latter, however, is only possible in exceptional cases, such as the European Union, where there is enough political will for harmonization and approximation between the states. Where such political will is missing, a more realistic safeguard is to include certain requirements for the implementation of international treaty obligations in the treaty itself. For example, a treaty can include provisions recognizing certain limits or standards of technology as the basis to be used in national laws. In most cases, this approach is more realistic and easier to achieve than a harmonization of national policies or laws.

Another challenge regards the necessary institutional frameworks. The fragmentation of responsibilities among different agencies, both within states and among riparians, needs to be overcome in

order to strengthen the joint development of shared waters. This can only be achieved by providing effective coordination mechanisms at the intra-state as well as inter-state level. One alternative is to nominate a focal point in the ministry responsible for water affairs who will serve as the convener and facilitator of in-country coordination (among the different line ministries that have an interest in the development of the water resource) as well as cross-country cooperation (among the different countries and international institutions).

"FRAGMENTATION OF RESPONSIBILITIES AMONG DIFFERENT AGENCIES NEEDS TO BE OVERCOME."

Roles of NGOs and CSOs in the process of national and local implementation

Political and administrative decision makers should not be the only ones involved in implementing international legal frameworks at the national and local levels. NGOs and CSOs also play an important role. They should be included in order to help ensure acceptance, awareness and ownership of arrangements for transboundary water management by the local parties who will be most affected, as they are the ones who will have to implement the processes on the ground. The involvement of NGOs and CSOs can range from facilitating dialogues on how to implement an international legal framework in the different states, to actively participating in these discussions in order to influence their results, to even supporting or monitoring the implementation processes in order to ensure compliance (see Chapter 3).

Implementation of an international legal framework at the national and local level requires close cooperation between the countries as well as all other stakeholders, including civil society and the private sector.

4.3 Establishing new international treaties on shared water management

Bearing in mind the importance of international treaties for setting the legal framework of transboundary water management systems, and also bearing in mind the need to develop new or improve existing treaties on shared water management, water managers need to understand which issues should be addressed in an international treaty and how such a treaty can be negotiated.

"WHERE NEGOTIATIONS ARE DIFFICULT, MEDIATION AND SUPPORT BY A THIRD PARTY CAN HELP."

4.3.1 Negotiating transboundary water treaties

Once states have identified the need for an international treaty, the text must be negotiated. In developing a bilateral treaty, existing diplomatic channels can be sufficient without the need for official face-to-face negotiations. Good diplomatic relations will increase the chance that an integrated management regime can be established. But if the states are facing tensions or unresolved disputes (e.g., territorial disputes), it will diminish their willingness and ability to cooperate. In such cases, where negotiations are difficult, mediation and support by a third party can help.

Case 4.1 Mediation and support in the negotiation of the Indus Waters Treaty [21]

One of the key elements in the process leading up to the signing of the Indus Waters Treaty was the role of the World Bank in bringing the parties together and mobilizing the requisite financing to make the treaty workable.

In 1951 the World Bank was invited to mediate between India and Pakistan in their efforts to agree a treaty. Bilateral negotiations prior to this had not been fruitful. Early progress was made in agreeing on procedures, commonalities, and on the total amount of water available and under discussion. Still, the conflicting claims of the two states created a stalemate. In 1954 the World Bank proposed allocating the western rivers (Indus, Jhelum and Chenab) to Pakistan and the eastern rivers (Ravi, Beas and Sutlej) to India. This proposal was eventually accepted by both sides.

To deliver equitable shares of water to both countries, however, Pakistan had to invest heavily in link canals, diversion structures and dams. The World Bank assisted the parties by negotiating a cost-sharing arrangement for these pivotal civil works, and raised US$900 million from the international community in addition to a commitment from India for another US$174 million. The World Bank's ability to mobilize financing at this juncture was crucial to addressing the final concerns of Pakistan.

The Indus Waters Treaty was signed on 19 September 1960. The World Bank is a signatory, though not a guarantor, of the Treaty. The World Bank had several specific responsibilities under the Treaty, many of which related to financing and have now been completed. The remaining responsibilities relate to conflict resolution. For example, if the Permanent Indus Commission is unable to resolve any 'question' between the parties, the issue is referred to a Neutral Expert. The World Bank manages the trust fund established to finance this process, and, if the two countries cannot agree, the World Bank (in consultation with the two countries) will appoint a Neutral Expert.

Negotiations become even more difficult when developing multilateral treaties. The process can be simplified by holding the negotiations in a convening forum, such as an international organization like the United Nations General Assembly, a regional cooperation framework such as the UNECE, or a special conference organized to consider a particular subject. In order to develop a first draft, working groups of technical and legal experts must be set up under the auspices of institutions or in the run-up to a conference. Although they lack the power to officially commit their states, these experts can be more flexible in negotiating a preliminary text.

The official treaty-making process – meaning the negotiation of the final treaty text – will then be held by state representatives with the necessary authority to approve an international treaty. If it is not possible to immediately convince all riparian states to join an international treaty, it may be possible to conclude a treaty first among a group of willing parties and explicitly leave it open for future accession, or to allow states who ratify the convention to enter reservations regarding unresolved dispositions.

"THE PROCESS OF DEVELOPING MULTILATERAL TREATIES CAN BE SIMPLIFIED BY A CONVENING FORUM."

Another option is to use a bottom-up approach to pave the way for future cooperation. Cooperative or joint scientific assessments, information exchanges, and local transboundary management efforts can lead to a slow but effective reconciliation of opposing views. Successful collaboration among local communities will help build trust and show the benefits of transboundary management. Such lessons can have a spill-over effect and lead to public pressure and increased demand for further cooperation at the local as well as state level.

Power relations between states influence the negotiation process. Upstream states are generally in a stronger position because they can physically abstract water before other riparians can use it. However, upstream-downstream relations can also change between states depending on the water resource under negotiation, if for example a state is upstream in one basin, but downstream in another. In case of such reciprocity, the positions of the upstream and downstream states are more balanced. Relative economic and military power, of course, will also colour power relations among riparians. Reluctant states may sometimes be persuaded to start negotiations if offered financial compensation, technical assistance, or compromises regarding other areas of interest, for example by using a benefit-sharing approach (see Chapter 2).

"COLLABORATION AMONG LOCAL COMMUNITIES CAN LEAD TO INCREASED DEMAND FOR FURTHER COOPERATION."

4.3.2 Setting up transboundary water treaties

The content of a treaty depends on circumstances, especially the relationship between the riparian states and the interests at stake. However, certain key features should be integrated in all treaties regulating shared waters:

Vision: defining the goal of a treaty

An international treaty needs a vision, consisting of a clear objective and scope as well as unambiguous definitions of the applied terminology. The focus of shared water regimes can differ. Treaties between states can concentrate on a region, a single river or lake, or only parts of a water resource (e.g., the surface water, but not the groundwater). Modern shared water treaties ideally should not apply to a limited geographical scope, but regulate the use of the water resource at the appropriate hydrographic scale – the basin. The scope can even be extended to other states that do not share the water, but may be affected by its utilization, or have an impact through their activities (e.g., farming, fishing and mining).

The benefits derived from water resources should not be narrowly defined in treaties. Water has many interrelated uses, in agricultural and industrial production, navigation, fishing, recreation and, quite critically, in the maintenance of ecosystems and their services. Thus, the scope of subjects included in an international treaty should not be too narrow, otherwise there will be constraints placed on the potential for application of a benefit-sharing approach, as described in Chapter 2. It can include regulating the economic use of the resource, pollution prevention and control, and protection and restoration of ecosystems. With such a broad vision, the treaty can provide a legal framework for development of specific agreements or protocols that address particular issues in greater detail. Ideally, it also foresees the creation of a management institution (see Chapter 5) that can address and coordinate implementation of the treaty according to its objectives.

"A TREATY CAN PROVIDE A FRAMEWORK FOR DEVELOPMENT OF PROTOCOLS THAT ADDRESS PARTICULAR ISSUES IN GREATER DETAIL."

Use: how the water resource is utilized and sustained for present and future generations

To achieve the treaty's vision and to promote equitable utilization, the treaty should specify the factors to consider as well as the process of balancing them. It can emphasize the most relevant issues, such as certain ecosystem factors or the interests of communities that depend on the water resource. Article 6 of the 1997 UN Convention on the Law of the Non-Navigational Use of International

Photo 4.1 Signing the Convention on the Law of the Non-Navigational Uses of International Watercourses by Ambassador Extraordinary and Plenipotentiary Deputy Head to the Permanent Representative of the Kingdom of the Netherlands- H. E. Mr. Alphons C. M. Hamer.

Watercourses provides useful guidance (see Section 4.1.3). The provisions, of course, need to be adjusted to particular circumstances and reflect state interests.

Substantive rules and obligations are needed to prescribe certain actions that parties must take, or refrain from, to protect the water resource for present and future generations. Such rules can include lists of noxious substances (the discharge of which is prohibited or restricted), general standards of effluents, pollution limits, a system of permitting, or certain technological standards (e.g., best available technologies) at the national level. Furthermore, the application of legal principles, such as the 'polluter pays principle' or the 'precautionary principle' should be stipulated in order to guide the implementation of the treaty.

Procedures: how to implement the agreement

An international treaty should include procedural rules that set a framework within which the states can peacefully discuss, cooperate and coordinate their activities.

Cooperation

One of the rules is the obligation of states to cooperate with each other in addressing international issues and solving international problems. The duty to cooperate is a general principle of international law, which is crucial to obtaining optimal utilization and adequate protection of a shared resource. This principle does not prescribe specific obligations and therefore is no blueprint for the necessary institutional structure to achieve cooperative management. However, in practice, cooperation comprises some specific duties such as: prior notification of planned measures, development of environmental impact assessments, consultation and negotiation in good faith, and collection and exchange of data.

The treaty, therefore, should regulate the conditions under which a state gives notice of a planned activity that might affect other states, and how to consult with states. It is important to raise awareness about a project idea, and give a real opportunity to discuss its negative effects. A clear notification and consultation process will indicate whether all states have the right to be notified and consulted, or only those that the planning state thinks are likely to be affected. A certain time period has to be set within which the planning state shall inform the likely affected parties and discuss the alternatives, as well as a deadline for them to raise concerns. The treaty may specify consequences if notice is not given. In international law, the duty to notify and consult does not oblige the acting state to conform to the interests of the affected state, but only to take them into consideration.

"THE DUTY TO COOPERATE IS CRUCIAL TO OBTAINING OPTIMAL UTILIZATION."

To find out who will be affected by a proposed activity, the agreement may foresee an obligation to conduct mandatory environmental impact assessments (EIA). The EIA process ensures that the economic and environmental effects of a proposed activity will be thought through by the planning state and analyzed by appropriate institutions before it is finally approved. In the case of shared waters, it is not enough to limit the assessment to the possible effects on the national territory. Rather, a transboundary EIA is needed that studies the impacts on upstream or downstream states and their stakeholders. The EIA provision should address the scope of information which the EIA has to contain, the consequences of an EIA for the decision-making process, and the level of public involvement in the EIA process. The latter is important in order to give affected stakeholders an opportunity to raise their interests and concerns.

The collection and exchange of relevant data is the basis for effective cooperation. It is important that data are made accessible to both affected states and local stakeholders. Therefore, it is good practice for states to exchange readily available data and information on the condition of the shared water resource on a regular basis. If a state is requested by another state to provide data or information that is not readily available, it should make its best efforts to comply with the request. But it may ask the requesting state to pay for the reasonable costs of collecting the data. States should also make an effort to collect and, where appropriate, process data and information in a manner that facilitates its utilization by the other states. The exchange of user-friendly data and information will help to make the final decision-making process more transparent and accountable.

Compliance, enforcement and dispute settlement

Parties to a treaty should address the problem of how to verify implementation of the treaty provisions. This requires a clear system for monitoring compliance and review. For example, a treaty might require that all parties regularly undertake evaluations and submit reports, while review of the compliance situation can be ensured through annual meetings of the parties. The monitoring process can be simplified if parties create a joint management institution entrusted with the duty to guide monitoring and reviewing. Providing sufficient rights for public participation is important for ensuring compliance. NGOs and CSOs can play a watchdog role as independent observers who are trusted by the majority of affected stakeholders. Furthermore, NGOs and CSOs can support the monitoring processes by providing the necessary technical capacities, which states often lack because of financial constraints.

The treaty should address how, if a situation of non-compliance is discovered, parties will respond and bring the non-complying party back to compliance. A treaty should provide the whole range of instruments: these include both supportive measures and incentives to enable or stimulate compliance as well as punitive measures that will pressure a state in case of persistent non-compliance.

Case 4.2 Compliance, enforcement and dispute settlement under the EU Water Framework Directive [22]

The European Union Water Framework Directive (WFD) regulates water resources management for all the member states of the European Union (EU). The primary concern of the WFD is surface and groundwater quality, as well as the protection of coastal waters. In contrast to earlier European Commission (EC) water legislation, the WFD calls for integrated water management based on hydrographic basins, and recognizes the ecological interdependency of water and land resources.

As an EC directive, the WFD is binding upon member states with respect to the results that have to be achieved, but the choice of methods and tools for implementation is left up to member states, i.e., the directive has to be transposed into national law. The EC is responsible for monitoring this transposition. If the Commission finds that a member state is not applying the WFD correctly, and therefore is not meeting its legal obligations, it can open an infringement procedure by sending a 'letter of formal notice' informing the country that a procedure has been launched and stating its allegations. A deadline is set for the country to respond.

If the matter cannot be resolved through this procedure, the Commission must refer the case to the Court of Justice. The Court's judgments are binding on EU institutions and member states. However, the Court of Justice does not have the power to annul a national provision that is incompatible nor can it substitute for the lack of adoption of national laws. It is up to the member state to take measures in response to the Court's judgment. If the member state fails to take action and non-compliance continues, the Commission may again bring the matter before the Court of Justice and may, at this point, seek the imposition of periodic penalty payments up to the point in time when the member state puts an end to the infringement.

A dispute-settlement process is indispensable in an international treaty. There are two types of dispute resolution: private remedies and dispute settlement between states. Private remedies give affected private parties access to administrative and judicial proceedings. This approach has a major advantage: since the dispute is not handled at the state-state level, but between a state and a private person, it is less likely to be politicized and therefore more likely to be resolved quickly. However, to provide for this type of dispute resolution, states must agree not to discriminate between nationals and non-nationals. In other words, the treaty must foresee that private persons of all affected parties are given the same rights and are entitled to the same legal remedies.

At the inter-state level, states are free to determine how to resolve their disputes. There is a wide range of dispute-resolution mechanisms: from collaborative, consensus-based instruments to arbitration or judicial settlement. This allows a stepped-approach that gives priority to an amicable settlement through direct negotiations between parties in the dispute. If no consensus is reached, the dispute should be referred to a joint institution (if such an institution exists) which could address the issue at one of its regular meetings. The third step would be to resolve a conflict through diplomatic means. If all the previous steps were unsuccessful, the dispute would be referred to arbitration in accordance with a procedure agreed to by the parties, or to an international court, such as the International Court of Justice, for a binding decision.

4.4 Law: the backbone of transboundary water management

Water law creates the backbone of transboundary water management, as it plays an important role in all phases – motivation, design and implementation (see Table 1.1). The emerging international law on freshwater, as well as national and local water laws, create a framework within which benefit sharing, stakeholder participation, institutional processes and the overall implementation of transboundary water management on the ground can be enhanced, simplified and ensured. Although in theory water law is not an absolute condition for transboundary water management, in practice it is a key factor for an efficient and successful management scheme.

Chapter 5

Institutions for Transboundary Basins

At their most basic level, transboundary water management institutions are created both to take advantage of opportunities and to solve problems created when a water body crosses the boundaries of two or more countries. The legal bases for these institutions are shaped at international, regional and basin levels (see Chapter 4), and manifest in national and local institutions and organizations, both governmental and non-governmental. Ensuring that basin-wide institutions are effective requires understanding of their role, how they are negotiated, and how they can be financed on a sustainable basis.

5.1 Transboundary basin development and management institutions: function, design and effectiveness

5.1.1 Institutional function

Basin-level management institutions can have a variety of functions and forms. In this chapter, we follow Keohane's classic definition of institutions as 'persistent and connected sets of rules (formal and informal) that prescribe behavioral rules, constrain activity, and shape expectations'.[23] In water resources, these institutional 'rules of the game' can be as informal as unwritten understandings or working arrangements; or very formal, embodied in international river basin organizations or legally binding treaties. As discussed in Chapter 4, in transboundary contexts these institutions are generally established through a treaty or similar agreement signed by two or more countries sharing a water resource.

"INSTITUTIONAL RULES OF THE GAME CAN BE INFORMAL OR VERY FORMAL."

The functions of transboundary institutions can range from data and information sharing, to handling discrete tasks such as constructing a dam, to the overall management of water issues within their basin, for example through the establishment of international river basin organizations such as the Mekong River Commission or the Organization for the Development of the Senegal River (OMVS). Table 5.1 provides a general typology of possible institutional functions and goals based on international environmental law literature.

The objective of transboundary cooperation will to a large extent determine the form managing institutions will take. In general, the more concrete the institution's objective, the more specific the supporting content, and the delineation of rights and obligations of parties involved. For example, a management institution established to facilitate the construction and operation of a dam may spell out the financial costs and distributions to each party, how the dam will be operated, and which data will be collected and by whom in order to verify that the agreement is being upheld. This is an example of an institution that is both *programmatic and regulatory* as described in Table 5.1.

Table 5.1 Functions and goals of transboundary institutions [24]

Function	General goal	Water-specific examples
Regulatory	Proscribing or prescribing action	Allocation of water, control of pollution
Programmatic	Pooling or generation of resources for projects of mutual benefit	Construction and operation of dams, the maintenance of environmental flows
Procedural	Regular, collective decision making	International river basin organizations, joint water management committees
Generative	Developing new social practices	Agreement on principles for water management such as 'no significant harm'

Institutions that establish broad frameworks for cooperation typically do not go into such detail. Many international river basin organizations simply set up a framework through which decisions on issues can be made later (*procedural* institutions). Others define only the spirit of the envisioned cooperation (*generative* institutions). In such cases, the formal institution may codify the ideas through which more informal cooperation and institution building takes place.

Some may think that generative institutions, those that outline general principles or provide forums for communication, lack teeth. However, these institutions can provide a means for signatory states to meet and discuss issues, promote information sharing between signatory countries, coordinate water resources development and management plans, and serve as a platform from which to secure donor assistance. They can also serve as a forum for building trust, confidence and capacity for the resolution of conflicts between signatory states.

All transboundary institutions can play a significant role in bringing states together in areas that go far beyond the waters they are designed to govern. In fact, the history of transboundary water agreements demonstrates their role in achieving further political cooperation. Even in two of the most contested landscapes in the world, the Middle East and South Asia, water resources have formed the cornerstone of international cooperation. Water sharing played an integral part in the 1994 Israel-Jordan Peace Treaty as well as in the 1995 Interim Agreement between Palestine and Israel. The institutions built to share water on the Indus have withstood the pressures of two wars between India and Pakistan. The opportunity to use water as a basis of international cooperation and peace, rather than as a cause of discord and conflict, should not be forgotten (see Case 2.1).

Taking advantage of water's unifying potential requires that transboundary water institutions must be designed appropriately and that they are structured to be effective.

5.1.2 Institutional design

It is tempting to look for the "ideal" transboundary institution. However, each institutional structure has costs and benefits. Every basin is unique in its biophysical, socio-economic and hydro-political setting and therefore in its institutional needs. For example, an institution established

through a detailed procedural agreement spelling out exact water quality standards to which each party will adhere can provide a clear basis for monitoring and enforcement. The specificity of such an institution may make it easier to design the supporting agreements and may even serve as a stepping stone for further collaboration in other areas. Such an agreement, however, may be more difficult to conclude, since concurrence must simultaneously be found on each detailed element. Finalizing such a specific agreement can also be risky for states, because it obligates them to specific future actions when they know hydrological, economic and environmental conditions, and perceptions of those conditions, will change.

"EVERY BASIN IS UNIQUE AND THEREFORE HAS ITS INSTITUTIONAL NEEDS."

At the other extreme, a less structured institution established for transboundary cooperation might be easier to conclude, because negotiations over contentious issues can be postponed, and management details can be worked out and implemented by professionals outside the glare of public and political scrutiny. The ambiguity of such arrangements can also leave more adaptive options in implementation as conditions change. However, ambiguity gives parties no clear guidance for action or how cooperation will be achieved. As a result, the institution may be unable to actually manage problems when new issues emerge, in particular those requiring immediate action.

In the end, it is the specific basin context with its challenges and opportunities that determines which institutional form is most appropriate. Nonetheless, the experience of practitioners and researchers has led to some consensus on certain attributes that should be considered in the design of any transboundary institution.

"CERTAIN ATTRIBUTES SHOULD BE CONSIDERED IN THE DESIGN OF ANY TRANSBOUNDARY INSTITUTION."

Finding scope for cooperation

The first step is to identify the scope for cooperation. Sometimes it is clear how cooperation can lead to win-win solutions for all states sharing a transboundary waterway (see also Chapter 2). However, one of the most frequent challenges in creating basin-wide institutions is overcoming the geographic, economic and political power asymmetries typical between riparian states. At the most obvious level, upstream countries are normally thought to hold hydrological hegemony over their downstream neighbours and therefore have little reason to negotiate, even when an agreement may improve overall basin conditions. However, experience has shown that these challenges and asymmetries can be managed to become forces for cooperation.

For example, the upstream/downstream problem can be overcome by having the lower riparian state compensate the upstream state for certain actions. In the particularly elaborate 1986 Lesotho Highlands Treaty, South Africa agreed to help finance a hydroelectric and water diversion facility in upstream Lesotho. In the exchange, South Africa secured the delivery of water supplies while Lesotho received all of the power generated. While there were also broader political issues behind the agreement, it does provide an example of the possibilities. When both countries are poor, payments have sometimes been facilitated by third parties (donors), though there are both advantages and disadvantages to this strategy as discussed later.

Another way to find scope for cooperation is to expand the domain of the negotiations beyond a single basin. The United States and Mexico did just this to simultaneously come to a cooperative solution on the management of their three shared basins, the Colorado, the Rio Bravo/Rio Grande, and the Tijuana. In a similar vein, negotiations can be broadened to move beyond water itself to

the benefits of water including agricultural production, navigation, hydropower, and flood control. Moving away from water quantities provides new ways for each party to find a 'win' in negotiations, as shown in Chapter 2.

Water is typically only one issue of concern between neighbouring states. Scope for cooperation on water can be broadened by incorporating water into other transboundary negotiations on topics such as trade, transportation, communications and political issues. For example, India and Nepal bundled projects including irrigation, hydropower, navigation, fishing and afforestation into two treaties concluded in 1959 and 1966. Creating multipurpose linkages not only provides additional bargaining options, but also, by reducing duplicative efforts, may result in a more efficient and mutually beneficial allocation of resources, both natural and monetary. Expanding the scope of negotiations beyond water can also increase both the incentives to cooperate as well as the longevity of any ensuing institution, as parties may have more to gain by cooperating and more to lose if they defect. The unfortunate corollary, however, is that as the number of stakeholders and issues increase, the difficulties in finding an outcome that pleases everyone can increase.

"NEEDS-BASED CRITERIA GENERATE MORE BUY-IN THAN THOSE IMPOSED FROM OUTSIDE."

Moving from rights to needs to benefits

Even after the scope for cooperation has been identified, many negotiations become hamstrung because of entrenched and contradictory opening positions. Generally, parties phrase their initial positions in terms of rights – the sense that a riparian is entitled to a certain water allocation based on hydrography or chronology of use. But in the agreements behind many successful institutions, the paradigms used for negotiations have usually been 'needs-based' rather than 'rights-based'. 'Needs' can be defined by irrigable land, population or the requirements of a specific project. Table 5.2 provides examples of needs-based criteria that have been used in practice. Criteria determined in dialogue between riparians usually generate more buy-in than those imposed from the outside, although third parties have played useful roles in providing neutral platforms, as well as technology, to help quantify needs.

Table 5.2 Examples of needs-based criteria for treaty allocations

Treaty	Criteria for allocations
Johnston Accord (1956, Jordan)	Amount of irrigable land within the watershed in each state
India/Pakistan (1960, Indus)	Historic and planned use (for Pakistan) plus geographic allocations (western vs. eastern rivers)
South Africa (Southwest Africa)/Portugal (Angola) (1969, Kunene)	Allocations for human and animal needs and initial irrigation
Israel-Palestinian Interim Agreement (1995, shared aquifers)	Population patterns and irrigation needs

Going a step further, a benefit-sharing approach to negotiations (Chapter 2) moves past rights and needs entirely, and focuses on more general benefits. This approach requires riparians to focus not on water as a commodity to be divided and allocated – a zero-sum game – but rather on sharing the range of possible benefits that could be generated from their shared waters – a positive-sum, integrative approach.

Although there are only a handful of examples to date, a look at some past benefits-based agreements offers insights into how such an approach can be institutionalized. The 1964 Columbia River agreement between the United States and Canada, for instance, allocates water according to equal benefits, as defined by hydropower generation and flood control. Applying a benefits concept in a different way, the 1975 Mekong accord defines 'equality of right' not as equal shares of water, but as equal rights to use water on the basis of each riparian's economic and social needs. The relative nature of 'beneficial' uses is exhibited in a 1950 agreement on the Niagara river between the United States and Canada, which provides a greater flow over the famous falls during 'show times' of summer daylight hours, when tourist dollars are worth more per m^3 than the alternate use in hydropower generation.

Where negotiations should start or stop on the rights-to/needs-to-benefit continuum depends on the specific basin conditions.

Maintaining flexibility

Once signed, the formal agreements behind transboundary institutions are difficult to modify. Thus countries must take great care in designing institutions that will have the greatest chance to handle unexpected changes in information, conditions and priorities that will inevitably occur over time. This challenge can be overcome by building in institutional flexibility, a process known as adaptive management.

Water allocation is not always the biggest issue in transboundary cooperation. However, it is at the heart of most transboundary water conflicts and thus an area where considerations of flexibility are paramount. Furthermore, allocation depends on uncertain future water quantities – a situation likely to be further exacerbated with climate change.

The price of failing to design an adaptable institutional mechanism is illustrated by the case of a 1994 agreement between Israel and Jordan that did not consider the impact of drought. As a result, peace between the two nations was threatened in 1999 following the worst drought on record. Similarly, although a 1944 agreement between the United States and Mexico did include provisions for low flows, it was not flexible enough to handle an extremely low-flow situation that occurred. As a result, the agreement is still a source of domestic tension in both countries.

"UNEXPECTED CHANGES IN INFORMATION, CONDITIONS AND PRIORITIES INEVITABLY OCCUR OVER TIME."

Institutions can address hydrological variability in three general ways. First, mechanisms can be built within allocation-focused agreements, for example, by specifying percentages of flows rather than fixed quantities. Second, agreements can be made so that parties have options in the way they use their allotted waters. For example, the unofficial 1956 Johnston Accord between Jordan and Israel determined allocations for irrigated agriculture *within* the Jordan basin. However, Israel used most of its allocation differently, even outside of the basin. Nonetheless, Jordan and Israel continue to adhere to the Johnston allocations despite dramatic changes to water-related parameters within the basin over the past 50 years.

Finally, institutions can be designed to jointly manage changing conditions. For example, the 1996 Ganges River Treaty allocates water to India and Bangladesh on a variable schedule, depending

on the prevailing hydrological conditions of any given year. Joint management bodies on shared waterways between both the United States and Canada, and the United States and Mexico allow for formal modifications, which have been used to incorporate issues such as water quality, groundwater management and environmental protection that have gained in priority over time.

The institutional design of joint management structures can even extend to non-signatory riparians by incorporating provisions addressing their needs, rights, potential accession and involvement. There are a variety of possible approaches for achieving this. The 1959 Nile Waters Treaty between Egypt and Sudan, for example, has a placeholder for future 'needs of other riparians'. In the Nile Basin Initiative, Eritrea currently has observer status. The Mekong River Commission involves China and Myanmar as 'dialogue partners' with a view to facilitating future accession. In relation to the 1999 Rhine Convention, as not all basin states are contracting parties, a Coordinating Committee has been set up in order to ensure that the non-contracting basin states Austria, Belgium, Liechtenstein and Italy are involved in the implementation of the EU Water Framework Directive, which is part of the mandate of the Rhine Convention's secretariat.

Sharing data and maintaining open communication

As water management models become more sophisticated, data are increasingly vital. Information itself can be used as a form of negotiating capital and data sharing can lead to breakthroughs in negotiations. For example, an engineering study allowed circumvention of an impasse in the negotiation of the Johnston Accord when it was found that Jordan's water needs were not as extensive as had been thought, allowing for more room in the bargaining mix. Conversely, the lack of agreed criteria for data in negotiations on the Ganges has hampered progress over the years.

"AS WATER MANAGEMENT MODELS BECOME MORE SOPHISTICATED, DATA ARE INCREASINGLY VITAL."

An interesting approach to overcoming differences in measurement criteria and methods is provided by the creation of the International Commission for the Hydrology of the Rhine. Within this Commission, which was founded by six Rhine basin countries, scientific research institutes of each of the six basin countries cooperate to develop hydrological models and joint hydrological measures for the sustainable development of the Rhine basin. The International Commission for the Protection of the Rhine (ICPR) contracts the Commission and its institutes to undertake research and the secretary of the ICPR attends the Commission's meetings.

Data issues, when managed effectively, can provide a framework for developing patterns of cooperation in the presence of more contentious issues. For example, data gathering can be delegated to a trusted third party or, better, to a joint fact-finding body made up of representatives from the riparian states. Perhaps the best example of this is the Mekong Committee's first five-year plan, which consisted almost entirely of data-gathering projects, effectively precluding future data disputes and providing an opportunity for the riparians to develop cooperation and trust.

Although data sharing is critical, it is in fact just one step in a broader range of shared communication that should be the final goal. Developing informal and formal channels to share information, ideas and perspectives between riparian states can help avert conflict before it occurs and can serve as a venue for solving contentious issues. Developing such channels through the establishment of joint management institutions can also remove the need to codify rules on current resource sharing and future resource uncertainty, thereby reducing the transaction costs of forming agreements and the likelihood of future breakdowns in agreement.

For example, the Israeli-Arab Working Group on Water Resources, a multilateral outcome of the 1991 peace talks, was unsuccessful in developing a single water data bank, given the strong suspi-

cions between riparians and the political sensitivity of the data. Nevertheless, riparians did agree to develop individual data banks, where the data were at least to be collected in a common format, in the hopes they could be combined in the future. Thus, even in difficult settings, an iterative and adaptive management plan can be regularly 'recrafted' to adapt to, or even lead, evolving political relations.

D*efining conflict resolution mechanisms*

No matter how carefully an institution is designed, there will be disagreements in operation and interpretation. Thus a final critical element in institutional design is the creation of mutually agreed conflict resolution mechanisms. Numerous tools and techniques are used for conflict resolution, and existing transboundary water agreements can provide useful models.

Conflicts can be referred to pre-established oversight bodies with decision-making and enforcement authority. Examples are the International Joint Commission and the International Boundary and Water Commission for waters shared between the USA and Canada, and the USA and Mexico, respectively. Alternatively, an international or regional body such as the United Nations or the Southern Africa Development Community can be established as a mediating body if problems cannot be resolved by signatory states (see Case 4.1).

Further, riparian states should not overlook indigenous forms of resource conflict negotiation already in use by states or even communities within the basin. The important point is not which method is selected but that the method is clearly defined in advance of a problem arising.

5.1.3 Institutional effectiveness

Beyond the design of effective transboundary institutions, the actual effectiveness of any institution will depend on a wide variety of local and regional circumstances. Furthermore, in creating a basin institution or in improving the effectiveness of an existing institution, the parties involved must consider what they mean by 'effective' and whether such an institution is in fact financially and politically feasible.

In general, there are two ways to be effective: through compliance and through goal attainment. Compliance means adhering to agreed obligations, such as maintenance of water quality standards, the release of flows from a dam, or the timely payment of dues to a basin organization. Compliance with the terms of agreements is of course desirable, but it is important to remember that complying with an agreement is not the same as having the institution meet its goals. Transboundary institutions are created to achieve mutually agreed goals. As discussed earlier, these goals may be specific, such as sharing flow data in agreed formats and units, or broadly defined, such as promoting basin-level development or cooperative environmental protection.

"COMPLYING WITH AN AGREEMENT IS NOT THE SAME AS HAVING THE INSTITUTION MEET ITS GOALS."

It is possible for all parties to comply with an agreement, but for the resulting institution to fail to meet its goals. Conversely it is also possible for the overall goals of the institution to be met despite a lack of compliance with specific obligations.

In practice, measuring effectiveness is far from straightforward. However, a first step is for all parties to understand what they mean by effective, how effectiveness can and will be assessed, and how their shared institutions could be adapted if they are not as effective as originally planned or if goals change.[25]

5.2 Developing transboundary basin management organizations

5.2.1 Negotiating mission, mandate and goals

An important determinant of the nature of any water management institution is the people involved in its creation (see also Chapter 3). Questions about management authority and participation in oasis communities in North Africa are essentially the same as those confronted at the international level. Who decides what issues will be addressed? How much input should the public have, and at what levels? The solutions local communities have developed over the centuries to respond to these questions are increasingly viewed as valuable examples for international water negotiations.

Related to the potential value of local customs in determining participation patterns is the idea of 'subsidiarity', which suggests that the most efficient management should be at the lowest level consistent with adequate accounting for externalities. But in practice, how can the principle be applied? Top down? Bottom up? Something in between?

Public participation approaches are increasingly seen as more transparent and more democratic, and to result in greater environmental sustainability, than expert-centred negotiations. However, communities, like nations, are not homogeneous in their interests. For example, local water stakeholders include domestic users, environmental interests, agriculturalists, hydropower generators, fishing interests and recreationalists – any two of which are regularly at odds. Add to the complexity of interests and stakeholders within one country the sets of diverse interests in neighbouring countries and the difficulty of determining who should be involved in negotiations becomes clear.

Approaches to addressing the complexities of stakeholder engagement in transboundary water management were described in Chapter 3. Use of these approaches can allow for broad stakeholder involvement within a framework of hierarchical management. For example, within the European Union, which generally adheres to the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, bodies such as the Environmental Program for the Danube River act as a basin-wide international body that actively encourages public and NGO participation throughout the planning process.

Similarly, the International Joint Commission (IJC) between the United States and Canada, established by the Boundary Waters Treaty of 1909, invites public participation in various aspects of managing and monitoring the countries' shared waters. This proactive stakeholder participation may help preclude future disputes within countries and, as a consequence, internationally.

In contrast, in southern Africa, where such participation is not required by law, basin communities have developed programmes, such as Every River Has Its People, which aims 'to promote the sustainable management of natural resources of the Okavango River with local-level community participation and, in turn, develop mechanisms to promote and facilitate participation between communities and other stakeholders, locally, regionally and nationally'.

More formally, the Nile Basin Initiative incorporates the interests of member states' ministries of energy and industry, planning and finance, environment, foreign affairs, and agriculture along with water, depending on the type of project. The NBI also includes a Confidence Building and Stakeholder Involvement project to incorporate the views of NGOs and civil society in its visioning process. The autonomous Nile Basin Discourse extends participation even further (see Case 3.1).

Ideally, representatives of all interests would have a seat at the negotiation table. However, such an approach is generally unrealistic because of its complexity. The public can play a critical role in identifying existing or potential problems both before and after an institution is created, either directly or indirectly through representative government or advocacy groups. Once the problem or problems are identified, however, negotiations may need to be placed in the hands of technical negotiators for later reference to diplomats. Alternatively, general frameworks for cooperation may

be negotiated at higher diplomatic levels, with the details worked out through separate technical discussions which could involve public participation at various stages.

The goal is to ensure that the interests of stakeholders are heard not only in the formulation of issues to be addressed, but also in negotiation, implementation and monitoring processes. In practice it will be necessary to find compromises in which stakeholders have a mechanism to voice their interests even if they are not directly included in the formal negotiation and implementation process.

"STAKEHOLDERS MUST BE ABLE TO VOICE THEIR INTERESTS EVEN IF NOT DIRECTLY INCLUDED IN THE FORMAL NEGOTIATION AND IMPLEMENTATION PROCESS."

5.2.2 Creating regional balance

To ensure long-term institutional resilience, it is equally important to avoid imbalance, and perceptions of imbalance, in transboundary institutions and their implementation. A number of mechanisms have been used to accomplish this, even when the states involved have unequal power outside of the transboundary institution.

Creation of 'supranational' authorities that oversee institutional operations is one such mechanism. For example, the IJC comprises an equal number of representatives from the United States and Canada and has offices in both countries. Similarly the International Boundary and Water Commission (IBWC) between the United States and Mexico has two commissioners, one from the United States and one from Mexico, with offices in adjoining cities across the border, which also serve as alternating venues for the Commissioners' meetings. In Southeast Asia, the intergovernmental Mekong River Commission has rotated its headquarters between member states to reduce the actual or perceived national preference a host country might obtain. In West Africa the riparian states of the Senegal River made cooperative infrastructure and management investments, rather than unilateral investments, as a way to balance power. In Southern Africa, the SADC countries initially each housed one of the SADC sectoral offices.

These are examples of administrative solutions to the question of regional balance. However, regional balance can also be fostered by the very nature of an institution. Broadening the scope of an institution beyond water (see Chapter 2) can lead to more equal power relations and thus reduce the need to use administrative measures to create balance. For example, where an upstream riparian may have hydrological 'power', the downstream counterpart can control ports and fish passage. Ensuring that the management institution encompasses both hydropower and fishing can equalize power relations.

"BROADENING THE SCOPE OF AN INSTITUTION BEYOND WATER CAN LEAD TO MORE EQUAL POWER RELATIONS."

5.2.3 Linkages with national institutions

Transboundary water management institutions may seem to be independent organizations. However, in reality they are directly connected with the national institutions of the countries they represent. The relationship between transboundary and national institutions can take one of two forms. In the first form, transboundary institutions can be structured to define basic rights or

responsibilities related to a shared resource while states themselves implement the agreement. For example, the transboundary institution might determine the quantity of water to which each state is entitled or set standards for water quality, but it is then up to each state's internal legal and decision-making structures to specify how it will fulfil its obligations or use its rights.

Case 5.1 Mekong Agreement lacks requirements for national rules [26]

The Mekong Agreement (The Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin) was signed by the governments of Cambodia, Laos, Thailand and Viet Nam on April 5, 1995. Geopolitical constraints and opportunities have greatly influenced efforts towards cooperation in the turbulent Mekong basin, which can be seen in three distinct phases:

- Phase 1: The Mekong Committee – Committee for the Coordination of Investigations of the Lower Mekong Basin (1957–1978) which included Cambodia, Laos, Thailand and Viet Nam;
- Phase 2: The Interim Mekong Committee – Interim Committee for Coordination of Investigations of the Lower Mekong Basin (1978–1995) which included Laos, Thailand and Viet Nam (but not Cambodia);
- Phase 3: The Mekong River Commission (MRC) (1995 to present) which includes Cambodia, Laos, Thailand and Viet Nam as members; with China and Myanmar as dialogue partners.

The Mekong Agreement promotes a 'shared vision of an economically prosperous, socially equitable, and environmentally sound Mekong River Basin'. It is a framework agreement that enshrines key international water law principles, outlines a process for developing rules and procedures on the equitable utilization of the basin's water and related resources, and establishes the Mekong River Commission as an intergovernmental organization.

The 1995 Mekong Agreement, however, has no provision requiring ratification of the Treaty and incorporation of the Agreement and its subsequent rules and procedures into the national legal and organizational systems of its signatory states. Treaty ratification by national authorities and transposition into domestic law are standard practice under international law (see Chapter 4). The lack of such a requirement in the Mekong Agreement has been widely seen as a serious weakness in efforts to ensure compatible and effective national institutions and legal authorities for implementing commitments under the Agreement.

Nevertheless, the MRC Secretariat, Steering Committee, National Committees and line agencies have all collaborated to develop policies to mitigate its institutional limitations, coordinating in recent years on, for example, navigation, flood and fishing policies, and developing protocols for managing transboundary environmental impact.

In the second form, the transboundary institution creates a structure such as an international river basin organization through which decision making can take place as needs, conditions and perceptions change. Here representatives of national institutions can have significant ongoing input and may use the opportunity to ensure that their national agendas are considered in international cooperation. Representatives of national agencies may be seconded to work for the basin authority or called on to provide data, analysis, advice and strategy. As in negotiations, the nature of the institutions chosen to participate will have great influence on the nature of decisions and, just as important, on the topics addressed.

Thus, as in negotiations, it is important that a broad range of interests, including government institutions and civil society organizations, have input not only on the solutions to problems but also on the very problems under consideration. Broad participation may be especially important in many developing country contexts where, at the local level, decisions on water and land resources are made through informal laws which may be overlooked in official channels.

5.2.4 Capacity needs and capacity building

Transboundary water management institutions have tended to focus on problems of water development or sharing – problems that could often be solved by hydrologists and engineers giving advice to diplomats and lawyers. However, as water resources have become more developed in most regions, there has been a shift in emphasis from water development (i.e., investment in tapping new water sources) to water management (i.e., investment in improving water use practices.) This shift has occurred amid a larger trend to connect broader social and environmental issues with transboundary water management.

"THERE HAS BEEN A SHIFT FROM WATER DEVELOPMENT TO WATER MANAGEMENT."

While hydrology and engineering are still central to almost all transboundary water issues, it is now critical that other fields – ecology, economics and sociology to name a few – are represented in national negotiating teams and in the structure and activities of basin institutions. Similarly, as the nature of transboundary problems has changed, it is now increasingly important that voices from a variety of sectors and interests are heard. Despite these changes, it is still frequently the case that water affairs are run by public-sector hydrologists and engineers.

The first question in ensuring appropriate capacity is whether the actors involved are aware of the range of interactions between disciplines that is actually needed – a question to be asked in rich countries as well as in poor ones. The actors and backgrounds needed depend on the issues at hand. What kind of capacity needs to be built will vary by basin and by country within each basin. Some questions to be asked in this regard include:

- Are experts available with the skills in appropriate subjects?
- Are non-governmental actors knowledgeable and available to participate and make their voices heard?
- To what extent are negotiators and experts in conflict resolution knowledgeable in water issues? and, conversely,
- To what extent are water experts knowledgeable in negotiation and conflict resolution?

"THE SPECIFIC CAPACITIES THAT NEED TO BE BUILT WILL VARY BY BASIN AND BY COUNTRY WITHIN EACH BASIN."

With gaps identified, basin managers can turn to a range of mechanisms to create appropriate capacities. Some mechanisms are formal education, the twinning of basins facing similar issues (e.g., between basins in the North and South), personnel exchanges and study tours. The challenge of capacity extends beyond the development of transboundary institutions, and needs to be ensured throughout the life of an institution.

5.3 Mobilizing finance

Even when all sides are willing to cooperate in the creation of institutions to develop and manage transboundary waters, a key challenge is how to finance negotiations and eventual implementation.

5.3.1 Challenges for developing countries

In wealthier countries, resources to negotiate and fund transboundary water institutions usually come from the countries involved. On the other hand, while developing countries often have rich traditions of water governance and well-developed mechanisms for water conflict management, they can lack the capital resources and mechanisms to implement these models at the international scale. In some cases, even raising the funds to cover the negotiation phase of institutional development can be problematic. Donors have sometimes stepped in to fill this role, often using the offer of finance as the initial impetus to start cooperative negotiations. In recent years, this type of donor support has come individually and jointly from international organizations, regional bodies and national government agencies (e.g., UNDP, USAID, NATO, EU Technical Aid to the Commonwealth of Independent States (TACIS), the Global Environment Facility's International Waters Program for the Kura-Araks; the UN and the Group of Non-Aligned Countries for the Ganges; the World Bank, the Global Environment Facility and USAID for the Syr Darya Basin).

The role of the international community in forming transboundary water-sharing agreements is somewhat controversial. On the one hand, external funding may be the only way for negotiations to move forward (indeed these costs of cooperation can be quite high), and third-party involvement can provide needed incentives to bring otherwise hostile neighbouring states to the negotiating table. World Bank involvement in brokering the Indus Basin Treaty between India and Pakistan is often cited as the classic positive role of outside involvement (see Case 4.1). The Mekong institutions, likewise, probably would have looked very different without outside financial support.

External financing can also come attached with external values and agendas, and donors may be, or may be seen to be, primarily concerned with facilitating negotiations tied to their own interests rather than the most pressing interests of basin riparians. In addition, third-party involvement can make cooperation more difficult if impartiality is not firmly established. Lack of third-party impartiality has been cited as an issue in solving problems surrounding cooperation on the Tigris-Euphrates, for example. Donors themselves must also be cautious in the degree to which they provide funding, since lack of financial participation by riparian states can signal lack of ownership, and thus little commitment to the resulting institution.

"THIRD PARTY INVOLVEMENT CAN MAKE COOPERATION MORE DIFFICULT IF IMPARTIALITY IS NOT FIRMLY ESTABLISHED."

In this regard, it has been argued that third-party involvement in transboundary institutions should end after the negotiation phase to allow the riparian states to take ownership and evolve institutions to fit their needs and their resources. But then the question becomes how to make the transition to sustainable long-term financing. Cost sharing between donor organizations and national governments is one possible solution, an approach used effectively in the Nile Basin. Bridge funding is another possible mechanism. Whatever approach is adopted, the goal for the donor as well as the riparian states should be to ensure local ownership of the process as well as the long-term sustainability of the resultant institution.

5.3.2 Sustaining finance for transboundary river basin agreements, institutions and management

The right strategy for financing transboundary water management institutions on a sustainable basis will depend first and foremost on the nature of the institution itself. Some institutions can link their financing to the cooperative development and operation of economic assets such as dams. For

example, in the agreement between the United States and Canada on the Columbia river, the United States helped to finance dams in Canada that produce significant hydropower but are also operated to control flooding downstream in the United States. The United States pays Canada on a continuing basis both for power and flood-control benefits, and these financial flows are used in part to sustain transboundary institutions on the Columbia.

Table 5.3 Mechanisms for financing transboundary water management institutions

Financing mechanism	Advantages	Disadvantages
General or line item budget (e.g., earmarked payments to support river basin organizations via a tax on water use in the basin, a general environmental tax, or a government budget line item)	Controlled by each riparian state	For poorer countries, it may not be feasible or possible to justify the trade-off between a long-term investment in management institutions and short-term funding needs.
Institutional development linked to financial flows created through regional cooperation	Provides relatively easy way to ensure that the institution is self-financing and the underlying agreement self-sustaining	Only possible when clear financial flows emerge from regional cooperation (e.g., hydropower production or contracted flood-control services).
Payment for ecosystem services (by one riparian state to another)	Facilitates agreements when one riparian state can deliver desired ecosystem services to another	Only possible if there is a clear ecosystem service provided and received; often difficult to specify and structure.
Payment for environmental and security services (by third party/ies)	Offers a mechanism for outside countries or actors to compensate riparians for decisions to create positive services	Requires third-party involvement in the agreement, which could help facilitate an agreement but also adds another player to the mix; agreements and outcomes may become more representative of outsider interests than basin priorities if local stakeholders are not sufficiently engaged in the negotiations.

When the activities of transboundary management institutions cannot be directly linked to monetary income, finding financing sources can be more difficult. However, options are available. In some cases, wealthier basin riparians may choose to contribute disproportionately to the operation of shared institutions out of a sense of fairness or because of the disproportionately high demand they have for the environmental or other services derived from cooperative management. Similarly, and probably more commonly, lower riparians are sometimes willing to contribute disproportionately to management institutions because they are often the greatest beneficiary. This has been the case in the operation of a number of transboundary institutions related to hydropower production, water quality and flood control.

These examples move towards the concept of 'payment for ecosystem services'.[27] While payment for ecosystem services is increasingly popular in national contexts, it has not yet been pursued as a strategy in financing or developing transboundary water management institutions. One possible avenue from a developing country perspective is to label the outcomes of cooperative management as international public goods – in terms of positive environmental outcomes, regional security or other factors – for which international, non-basin actors could choose to contribute. Such a 'payment for ecosystem and security services' approach could help move financing from the paternalistic donor-recipient model, to a service provider-customer model made up of equal partners. However, it is critical that a broad range of local stakeholders are involved in the decision-making process to ensure that the resulting agreements and financial flows have broad support.

Chapter 6

Implementing Cooperative Transboundary Water Management

Implementing transboundary water resources management will always be challenging – even where mutual benefits are clear, stakeholders are empowered, robust legal frameworks are in place, and institutions are well designed. Weak governance, a lack of political will, poorly aligned incentives for institutions and individuals, or simply shifting circumstances, perspectives and priorities can all undermine implementation of even the best designed schemes. Meeting the challenge requires vigilance, innovation and adaptability.

"IMPLEMENTING TRANSBOUNDARY WATER RESOURCES MANAGEMENT WILL ALWAYS BE CHALLENGING."

6.1 Role of implementation in transboundary water management

Three broad phases can be described in the cooperative management of transboundary waters (see Chapter 1).

Phase I – Motivate: Traditionally, states have focused on water development within their own borders. Cooperative transboundary water management requires a significant shift in focus, and significant costs and efforts to build the necessary trust, partnerships and institutions. Riparians, sometimes with the support of third parties, must be motivated to start this process. Often an ongoing conflict, or a desire to prevent an imminent conflict, will motivate states to begin a process of dialogue and negotiation. Increasingly, however, motivation is arising from recognition of the mutual benefits (economic, environmental, geopolitical, etc.) that can be derived and shared from enhanced cooperative water resources management on a basin-wide scale. The spectre of climate change, with the uncertainties and challenges it will pose for water management, will only add to the importance of – and motivation for – enhanced river basin cooperation.

Phase II – Design: Once states agree to pursue cooperative water management, the form that cooperation will take must be explored and designed. There are many ways in which riparians can enhance cooperation, from simple information sharing to formalized treaties and joint institutions and infrastructure investments. The appropriate level and form of cooperation will be driven largely by the nature and scale of potential benefits to be achieved through cooperation, and the costs involved. States and stakeholders must therefore enter into a multi-stakeholder dialogue to identify their full range of interests and risks (economic, social and environmental). Once the goals of cooperation become clear, the necessary formal and informal institutional, legal and consultative structures can be negotiated and designed.

Phase III – Implement: As challenging as it is to develop robust agreements, it is often even more challenging to implement them effectively. Implementation requires real commitment from governments

and stakeholders, and a difficult balance between holding to the spirit and specific obligations of agreements, while developing operational modalities that work in practice and adapting to changing circumstances.

"IMPLEMENTATION REQUIRES REAL COMMITMENT FROM GOVERNMENTS AND STAKEHOLDERS."

6.2 Operationalizing effective implementation

It is not sufficient to simply proclaim principles and rules in an agreement; the agreement must be 'operationalized' through concrete implementation arrangements. This process of operationalization is a key to the success of cooperative transboundary river basin management. It should be a well structured process that seeks to identify and align the interests of government agencies with the interests of stakeholders.[28] The nature of the implementation arrangements will depend upon the nature of the agreement, and, quite importantly, on the political, economic and environmental context of the basin.

Implementation of international agreements is generally defined as the activities a state undertakes to fulfil its obligations and to achieve the goals and objectives of the treaty.[29] Implementation therefore relates both to compliance and to goal attainment, as discussed in Chapter 5.

In fulfilling their obligations, states might be required to adhere to a certain pattern of behaviour, to refrain from or to undertake certain actions (e.g., exchange information, provide notification or make good faith efforts to enter into timely consultation on certain development projects), to achieve specific targets (e.g., maintenance of water quantity or quality to meet agreed standards), or to carry out joint development or basin development plans.[30]

Failure to implement an agreement, to comply with its provisions or to achieve its goals, can have serious political and legal consequences. It can colour broader relations between states – states whose rivers will always remain shared – and can discourage future cooperative efforts. It can undermine the very foundation of the agreement reached by the parties, and lead to a new conflict.[31]

The general goal of transboundary basin agreements is to improve the efficiency and equity of basin-wide water resources management. To achieve this requires states to coordinate and implement the planning, development, management and conservation of their shared water-related resources in a participatory and integrated way, consistent with relevant international conventions and national laws, policies, objectives and goals.[32]

What can be seen from this definition is that transboundary governance across a large basin is enormously complex. Words such as 'coordinate', 'facilitate', 'implement', 'water-related', 'participatory', 'integrated' and 'consistent with' are all open to interpretation. There is no universal guidance on their interpretation. When it comes to creating a functional framework for effective water resources management at the basin scale, it is therefore essential to build trust and create a shared vision of states' goals.

What are the key elements for successful implementation of cooperative transboundary water management agreements? How can we strengthen implementation, and how can we measure success?

6.3 Key elements of successful implementation

From basin to basin there will be different scopes and scales for operationalizing transboundary basin management. But there are several key elements that must be addressed when implementing

transboundary water agreements in order to sustainably manage the water resources in any river basin. They include:

- governance;
- knowledge management;
- participation;
- monitoring;
- adaptive management.

6.3.1 Governance: institutions, regulations and management

The first overarching attribute is governance – the political, social, economic and administrative systems that develop and manage water resources and deliver water services.[33] Governance arrangements are most clearly manifest through institutional arrangements such as well defined treaties, organizations, management procedures and regulations – but, importantly, governance also relates to effective implementation of these arrangements.

To be effective, these systems must be inclusive (involve all appropriate stakeholders), accountable (with regard to the rights and responsibilities of all parties) and adaptable to changing circumstances.[34] Sound financing plans and durable dispute-resolution mechanisms are two significant governance challenges crucial for successful implementation. As discussed in Chapter 5, the appropriate structure of institutions, both formal and informal, will be driven by the specific goals of transboundary cooperation and the unique context in which they are to be implemented.

One good example of the evolution of transboundary governance through implementation of an international agreement on water management is the development of mutually beneficial cooperation on more than 150 rivers and lakes along the 8,900km border between Canada and the United States.[35] The 1909 Boundary Waters Treaty is a framework agreement that sets out the basic principles and procedures governing the use of all boundary waters shared between the two countries, especially with respect to water quality and quantity, navigation, and dispute settlement. Within this legal framework, the two countries have entered into many more detailed implementation agreements governing specific issues and water bodies (see Box 6.1).

Box 6.1 Key agreements between the United States and Canada that have emerged within the framework of the 1909 Boundary Waters Treaty

National agreements

- 1925 Lake of the Woods Treaty
- 1939 Rainy Lake Convention
- 1950 Niagara River Diversion Treaty
- 1954 St Lawrence Seaway Agreement
- 1961 Columbia River Treaty
- 1972 Great Lakes Water Quality Agreement
- 1991 Air Quality Agreement

State agreements

- 2005 Great Lakes-St Lawrence River Basin Sustainable Water Resources Agreement between the Governors of the eight US states and the provinces of Ontario and Quebec
- 2005 Great Lakes-St Lawrence River Basin Water Resources Compact

The International Joint Commission (IJC) set up within the framework of the Boundary Waters Treaty has proven highly adaptable. Through many decades of successful operation, it has effectively expanded its mandate from monitoring water levels along the boundary, to managing the implementation of complex water-sharing and water-quality arrangements, and boundary water resources development and management.

A similarly longstanding legal regime has evolved with respect to the International Commission for the Protection of the Rhine (ICPR), which has experienced a growth in the scope of its traditional water quality management/pollution control mandate towards a broader 'ecological protection' and flood defence mandate.[36] The precise contours of such expanded mandates are the subject of regular reviews and progressive development of the basic agreement, the 1976 Convention for the Protection of the Rhine against Pollution from Chemical Substances.[37]

There are also numerous examples of river basin commissions that are endowed with ambitious basin-wide governance mandates, but are facing serious challenges in implementation and genuine multi-state political commitment.[38]

The Mekong River is an example of mixed – but constantly evolving – results.[39] During the past 10 years, the parties to the 1995 Mekong Agreement (see Case 5.1) have entered into several sub-agreements, procedures and other technical guidelines as implementation has progressed:

- Procedures for Data and Information Exchange and Sharing (2001);
- Technical Guidelines on Custodianship and Management of the Mekong River Commission Information System (2002);
- Procedures for Water Use Monitoring (intra-basin water use and inter-basin diversions) (2003);
- Procedures for Notification, Prior Consultation and Agreement (2003);
- Procedures on the Maintenance of Flows on the Mekong Mainstream (2006);
- Procedures on the Maintenance of Water Quality (pending).

Many of these agreements, however, are ambiguous, difficult to implement and lack clear enforcement mechanisms.[40] For instance, in June 2006, the Mekong River Commission (MRC) ministerial council could only *agree to agree* on procedures to maintain flows on the Mekong. Clear and enforceable implementation procedures are still needed to maintain environmental flows.[41]

The EU has likewise been challenged in its efforts to ensure national-level implementation of the transboundary Water Framework Directive (WFD) (see Case 4.2). The riparians of the Tigris-Euphrates, despite repeated attempts, have not succeeded in establishing any basin-wide governance mechanisms (see Case 6.1).

Case 6.1 The Tigris-Euphrates Joint Technical Committee – deadlocked [42]

The Tigris-Euphrates river valley is often referred to as the cradle of civilization. The two rivers, shared by Iran, Iraq, Syria and Turkey, flow most of their journey to the sea in two separate streams but are generally regarded as one system. This apparently simple distinction has proved an impediment to transboundary cooperation in the basin.

There is no basin-wide agreement on the Tigris-Euphrates, although the idea of a Joint Technical Committee (JTC) was discussed by Iraq, Syria and Turkey as early as 1965. A Protocol between Turkey and Iraq set up a JTC on Regional Waters in 1980; Syria joined in 1983. The JTC was a committee of experts with a mandate to determine methods and definitions of reasonable water use for each country. After 16 meetings they were

not able to reach consensus on basic principles and definitions, and the work of the JTC was essentially deadlocked in 1992.

One of the key reasons for the impasse was the inability of the three countries to reach an agreement as to whether the Euphrates and Tigris rivers should be considered one system, in which case the water to be allocated would be that of the entire basin, or whether discussions could be limited to the Euphrates River alone.

Some consider trilateral cooperation under this Committee a failure, blaming the countries' differing views regarding the basic function of the JTC. Turkey, a hydrological and economic hegemon in the system, considered the JTC a consultative body, whereas Syria and Iraq hoped it would develop a water-sharing agreement. Others argue that the JTC was a successful forum, which despite its irregular meetings provided at least for some level of consultation and cooperation among the riparian countries.

In the absence of a basin-wide agreement, a number of bilateral accords have emerged. For example, in 1990 Syria and Iraq entered into a bilateral agreement according to which the two countries share the waters received from Turkey on a 58% (Iraq) and 42% (Syria) basis. Those who follow the history and politics of cooperation in the basin are sceptical, however, as to whether these occasional agreements have been honoured.[43]

6.3.2 Knowledge management

A robust and trusted knowledge base is another key to implementing cooperative transboundary water management. Knowledge should inform riparian perceptions of the costs and benefits of cooperation, and is therefore a crucial element in motivating transboundary management. A shared understanding of the river system among key stakeholders as well as river basin planners is crucial for diminishing information asymmetries that engender mistrust, and for generating evidence-based options for cooperative management.

"KNOWLEDGE IS A CRUCIAL ELEMENT IN MOTIVATING TRANSBOUNDARY MANAGEMENT."

Usable knowledge comes in many forms, from specialized data in the western scientific tradition to the informal knowledge of indigenous peoples.[44] Chapter 40 of Agenda 21 underlines the importance of information and knowledge for sustainable development:

"In sustainable development, everyone is a user and provider of information considered in the broad sense. That includes data, information, appropriately packaged experience, and knowledge. The need for information arises at all levels, from that of senior decision makers at the national and international levels, to the grass-roots and individual levels." [45]

An effective knowledge management plan need not necessarily focus on high-level technology, but should reflect a conscious strategy to deliver pertinent knowledge to the right people at the right time. Furthermore it should emphasize gathering and sharing knowledge in a cooperative manner that builds confidence in the knowledge base, diminishes duplicative (and expensive) data gathering and analysis, and fills strategic knowledge gaps. Important questions in knowledge management for cooperative transboundary water management include:

• *What is the focus of the information/knowledge?*

It should include, *inter alia*, hydrological, environmental and socio-economic data; information on development scenarios, and environmental and livelihood sustainability; institutional frameworks and incentives; and the economic, ecological and social values of natural resources.

• *Who are the intended users of the information/knowledge?*
The primary users are likely to include policy makers, researchers, and representatives of civil society. Knowledge should be developed in forms that are readily accessible and useful for these stakeholders.

• *How will intended users be reached?*
Dissemination mechanisms and information disclosure policies should be designed and periodically reviewed.

6.3.3 Participation: communication, trust and ownership

Participation builds trust, ownership and common understanding among stakeholders – the value of this process cannot be overstated. Participation clarifies goals, enhances effectiveness, diminishes conflicts and is essential to sustaining cooperative transboundary water management.

Communications is particularly important, as discussed in Chapter 3. Communication should not just be the delivery of information, or even an exchange of information, but rather a true consultation in planning and decision making. Many case studies show that if information on planned activities and side effects flows freely to nations and communities through a connected network, government is less likely to create dysfunctional rules, and more likely to engage in positive synergies.[46]

An effective planning process requires platforms for participatory dialogue where states, NGOs, academia and civil society can articulate different perspectives. A major challenge for transboundary basin organizations is to incorporate the views and legitimate concerns of all stakeholders, and to ensure that the views of even the weakest legitimate stakeholders are heard.

"AN EFFECTIVE PLANNING PROCESS REQUIRES PLATFORMS FOR PARTICIPATORY DIALOGUE."

Dialogues can make a significant contribution to improving the use and governance of water resources in the transboundary basin, by bringing together people from diverse backgrounds and interests to explore water futures together. If done well, dialogues can reduce conflict, better represent the interests of marginal groups, and better meet diverse local and regional needs.[47]

In the Mekong Basin, regional research groups and NGOs organized and facilitated multi-stakeholder dialogues – the Mekong Regional Waters Forum and the National Mekong Water Dialogue Forum – to provide a well structured input for state, development banks, non-state, and business actors.[48] The Nile Basin Initiative, as previously discussed, encourages participation through many avenues, most notably the Nile Basin Discourse (see Case 3.1). The IJC in partnership with mayors from towns in the Great Lakes-St Lawrence River Basin area lying between the USA and Canada, launched public participation campaigns that gathered input from more than 4,100 people (see Case 3.2).

In Europe, the EU WFD enables the involvement of interested parties in implementation. In particular in the production, review and updating of River Basin Management Plans, member states are required to allow at least six months for public comments.[49] The 1999 Rhine Convention (Article 14) provides for cooperation by granting observer status to interested states, related intergovernmental organizations, or NGOs who accept the targets and principles of the Convention.

6.3.4 Monitoring

Monitoring and reporting are irreplaceable tools for determining if programmatic activities are achieving their objectives, for assessing whether programmes are having any unanticipated physical or socio-economic impacts, and for providing guidance that shapes adaptive management responses.

A performance management system is required for effective implementation. This must ensure that work programmes are clearly defined and that quality and timeliness indicators for both organizational performance and basin sustainability are established. It should enable use of these measures to monitor delivery, and ensure that corrective actions are taken if needed. In this context, strategic performance means that rules, procedures, guidelines and protocols need to be prepared and implemented; and their impacts monitored and reported on. Assessment of the impacts of policy decisions and their implementation should be undertaken periodically in order to guide ongoing adjustments in the policy framework and future strategic planning.

Various methods are used to monitor change in the environment, from simple measures of water quality, to more complex ratings of quality, to indicators of sustainable development. The Great Lakes Water Quality Agreement between the United States and Canada includes specific objectives to restore and maintain the chemical, physical and biological balance of the Great Lakes ecosystem. It is periodically updated and reviewed (1972, 1978, 1987 and 2006) to strengthen its programmes, practices and technology, and to increase accountability for implementation in light of scientific advances. The IJC monitors and assesses the progress of implementation and advises the two governments.

The Rhine Action Programme (1987) adopted salmon as a charismatic indicator of water quality and biodiversity restoration. The Programme's 'Salmon 2000' campaign reintroduced native salmon species that had been lost as a consequence of declining water quality and increased sediment pollution. The newly thriving salmon population was monitored as an indicator of the Programme's success.[50]

The EU WFD introduced a control mechanism for ensuring the continuous adaptation of standards.[51] Member states are committed to achieving 'good' chemical and ecological status of surface water within 15 years.[52] Criteria for achieving 'good' ecological status are defined, and 'good' chemical status is achieved if concentration of pollutants in the surface water does not exceed specified environmental quality standards. Detailed baseline information is regularly reviewed and updated to monitor subsequent improvements.

In some areas, monitoring is used to compile a more sophisticated set of 'basin sustainability indicators' and data are collected to assess the impacts of various development and conservation programmes on these indicators. In its 2003 State of the Basin report, The Mekong River Commission gave an overview of developments and their cumulative impacts on basic hydrological, environmental and economic characteristics of the basin. It plans to update these reports on a regular cycle of no more than three years, and to extend them to include trend analyses.[53]

6.3.5 Adaptive management

Adaptive management is defined by the Millennium Ecosystem Assessment as a systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices.

Adaptive management was initially conceived in the 1970s[54] as a paradigm for natural resource management aimed at reducing uncertainties and promoting management strategies capable of responding to unanticipated events. Adaptive management appears well suited to the challenges of transboundary water management which involves hydrological uncertainty (particularly under climate change), multiple stakeholders, changing objectives and the need to maintain open and constructive relations between riparians.

The process calls for regular review of management objectives, monitoring and evaluation of outcomes, stakeholder participation, and mechanisms for using this new information to modify management policy, strategies and practices. It gives decision makers the flexibility to adjust strategies,

policies and practices as their impacts become clear, and as conditions, knowledge and social priorities change.

Adaptive management is not a panacea for implementing transboundary management regimes, which in the best of circumstances will be challenging. In fact it is easy to imagine circumstances in which the potential discontinuity of adaptive management processes could undermine confidence, particularly in fragile political contexts or simmering conflicts. Moving from theory to practice in adaptive management also requires the willingness of individuals and institutions to identify and reverse ineffective policies, and to recognize and redress unintended consequences. Self-interest, differing values, and the inflexibility of most administrative structures tend to limit implementation of adaptive management strategies.

"SELF-INTEREST, DIFFERING VALUES AND INFLEXIBILITY LIMIT IMPLEMENTATION OF ADAPTIVE MANAGEMENT STRATEGIES."

The basic tenets of adaptive management processes – continuous communication, review and reassessment– are essential for implementing transboundary water management. Moving forward against a backdrop of rapidly rising water demand and increasingly uncertain climate forecasts, the need for open dialogue and rigorous multidisciplinary analysis of water management policies will only gain in importance.

6.4 Implementation and benefit sharing

The elements above – governance, knowledge management, participation, monitoring and adaptive management – are key to implementing cooperative transboundary water management. Together they provide an enabling framework for sustained cooperative transboundary water management and equitable benefit sharing among riparians. All five elements are crucial.

These attributes are interrelated and reinforcing. Sound governance calls for transparent, evidence-based policy making, and structures that are inclusive, accountable and adaptable to changing circumstances. Good knowledge management informs decision making and provides stakeholders with the opportunity to contribute substantively to management processes. Participation promotes inclusivity, empowers stakeholders in participatory water management processes, and ensures greater understanding of the range of values and distribution of costs and benefits associated with water management policies and practices. Monitoring evaluates the impact of these processes against stated management objectives and provides guidance for future changes. Finally, adaptive management provides a mechanism for continuously learning from, and improving upon, experience.

All elements have to be implemented within the constraints of political, social and economic realities. Implementation cannot follow a blueprint, but should be facilitated through a pragmatic approach that is firmly grounded in the overall goal of cooperative transboundary water management leading to equitably shared, sustainable benefits.

Cases and boxes

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